



## **QUARTERLY GROUNDWATER MONITORING REPORT**

**First Quarter 2005 (Eleventh Quarterly)**

**Sampled on April 5, 2005**

**Job # SP-160**

**LOP # 12341**

**Big Oil & Tire - McKinleyville BP (McKinleyville 76)**

2698 Central Avenue

McKinleyville, California 95519

June 28, 2005

This *Quarterly Groundwater Monitoring Report* was prepared by SounPacific Environmental Services (SounPacific) staff for Big Oil and Tire Co. (BO&T), using previous studies that were conducted by Clearwater Group, Inc. (CGI), SounPacific, and file review conducted at Humboldt County Division of Environmental Health (HCDEH). The station is located at 2698 Central Avenue in McKinleyville, California (Figure 1).

### **SITE DESCRIPTION**

The station is positioned on the northwest corner at the intersection of Central Avenue and Reasor Road (Figure 1), approximately 1.5 miles north of downtown McKinleyville. Site improvements include a single story building and two dispensers. The structure is approximately 800 square feet in size and is positioned near the western property line facing east towards Central Avenue. The site is surfaced around the current structure with concrete and asphalt. There is currently one (1) 15,000-gallon split compartment UST containing regular unleaded gasoline and premium unleaded gasoline, positioned approximately 17 feet from the southern property line. A mixer located at the

dispensers creates mid-grade gasoline. Sewer and water services are supplied by public utilities. Drainage ditches and municipal storm sewers control surface water runoff. All electrical and telephone lines are above ground (Figure 2).

## **SITE TOPOGRAPHY AND LAND USE**

Site topography is relatively flat. The site elevation is approximately 114 feet above mean sea level (amsl). Regional topography consists of rolling terrain that gently slopes to the west toward the Pacific Ocean (Figure 1). The site is located approximately 1.5 miles east of the Pacific Ocean. According to USGS maps, the site is located approximately 1,000 feet south of Norton Creek and 1,000 feet north of Widow White Creek.

This site is located on the uplifted Savage Creek Marine Terrace, which dates at roughly 83,000 years before present. The Savage Creek Marine Terrace deposits consist mainly of sand, with minor amounts of silt, clay, and gravel. These sediments were deposited on wave-cut benches that have since become exposed through tectonic uplift and changes in sea level. These marine terrace deposits are typically up to a few tens of feet thick and are late Pleistocene in age (Carver and Burke, 1992).

SounPacific understands that the property is owned by BO&T of Arcata, California. The main structure is used as a retail gas station for the retail dispensing of three (3) grades of unleaded gasoline from the USTs on site. A mini-mart that is combined with a cashiers' office is located inside the main structure.

The surrounding land use in the immediate vicinity is a mixture of commercial and residential. Properties to the immediate north and south of the site are commercial with residential properties located to the east and west of the site. This site is bordered on the south by Reasor Road and to the east by Central Avenue. An apartment complex is located adjacent to the west of the property.

## **RESULTS OF QUARTERLY SAMPLING**

Under approval of HCDEH, SounPacific is continuing with quarterly groundwater monitoring until further notice. Quarterly water level data will be used to input into a three-point gradient problem to generate a two-dimensional groundwater elevation contour diagram and calculate groundwater flow direction. Quarterly sampling events will monitor the fluctuation of hydrocarbon contamination levels present beneath the site. Monitoring wells were gauged and sampled on April 5, 2005.

### **FIELD DATA**

**Wells gauged:** MW-1, 2, 3, 4, and 6  
**Groundwater:** Ranged from 112.00 to 112.24 feet above mean sea level (Table 1)  
**Floating product:** Sheen detected in monitoring wells MW-1 and MW-6  
**GW flow direction:** South Southwest (Figure 3)  
**GW Gradient:** 0.002 feet per foot (Figure 3)

On April 5, 2005, the depth to groundwater in the site's five monitoring wells ranged from 1.64 feet below top of casing (btoc) in well MW-2 to 2.95 feet btoc in MW-4. When corrected to mean sea-level, water level elevations ranged from 112.00 feet above mean sea-level (amsl) in MW-1 to 112.24 feet amsl in MW-3. Groundwater levels for the April 5, 2005, monitoring event, along with historical level and elevations are included in Table 1. Groundwater flow was determined to be very flat, with a gradient towards the south southwest at 0.002 feet per foot. The groundwater flow and gradient are graphically depicted in Figure 3. Prior to sampling, all wells were purged; the groundwater field parameters for each well are presented below.

### **MONITORING WELL MW-1 GROUNDWATER FIELD PARAMETERS**

<b>Time</b>	<b>Total Vol. Removed/ gal</b>	<b>pH</b>	<b>Temp./ F</b>	<b>Cond./ ms(cm)<sup>-1</sup></b>
12:33	0	7.07	59.16	0.405
12:38	1.65	6.97	58.80	0.371
12:42	3.3	6.92	58.84	0.378
12:49	4.95	6.84	58.92	0.328

**MONITORING WELL MW-2 GROUNDWATER FIELD PARAMETERS**

<b>Time</b>	<b>Total Vol. Removed/ gal</b>	<b>pH</b>	<b>Temp./ F</b>	<b>Cond./ ms(cm)<sup>-1</sup></b>
1:01	0	6.89	58.79	0.162
1:05	1.81	6.85	58.34	0.142
1:09	3.62	6.83	58.37	0.133
1:14	5.43	6.81	58.37	0.138

**MONITORING WELL MW-3 GROUNDWATER FIELD PARAMETERS**

<b>Time</b>	<b>Total Vol. Removed/ gal</b>	<b>pH</b>	<b>Temp./ F</b>	<b>Cond./ ms(cm)<sup>-1</sup></b>
1:29	0	6.58	57.44	0.522
1:33	1.38	6.65	57.68	0.528
1:37	2.76	6.67	57.75	0.530
1:41	4.14	6.67	57.75	0.530

**MONITORING WELL MW-4 GROUNDWATER FIELD PARAMETERS**

<b>Time</b>	<b>Total Vol. Removed/ gal</b>	<b>pH</b>	<b>Temp./ F</b>	<b>Cond./ ms(cm)<sup>-1</sup></b>
2:00	0	6.78	55.86	0.156
2:04	1.48	6.73	56.18	0.157
2:07	2.96	6.60	56.24	0.158
2:13	4.44	6.52	56.26	0.161

**MONITORING WELL MW-6 GROUNDWATER FIELD PARAMETERS**

<b>Time</b>	<b>Total Vol. Removed/ gal</b>	<b>pH</b>	<b>Temp./ F</b>	<b>Cond./ ms(cm)<sup>-1</sup></b>
2:21	0	6.51	57.53	0.214
2:27	1.53	6.43	58.20	0.247
2:31	3.06	6.45	58.26	0.274
2:35	4.59	6.48	58.26	0.293

## **ANALYTICAL RESULTS**

**Sampling locations:** MW-1, 2, 3, 4, and 6  
**Analyses performed:** TPHg, BTXE, MTBE, DIPE, TAME, ETBE, TBA, TPHd, TPHmo  
**Laboratories used:** Basic Laboratory, Inc., Redding, California (Cert No. 1677)

The analytical results for the current monitoring event are presented below and graphically depicted in Figure 4. The laboratory report is included as Appendix A. The historical analytical results for all monitoring wells, since the implementation of groundwater monitoring are included as Table 2.

	<u><b>MW-1</b></u> <b>(ppb)</b>	<u><b>MW-2</b></u> <b>(ppb)</b>	<u><b>MW-3</b></u> <b>(ppb)</b>	<u><b>MW-4</b></u> <b>(ppb)</b>	<u><b>MW-6</b></u> <b>(ppb)</b>
<b>TPHg:</b>	<b>6,810</b>	<b>337</b>	<b>8,190</b>	ND < 50	<b>12,200</b>
<b>Benzene:</b>	ND < 12.5	<b>7.7</b>	<b>347</b>	ND < 0.5	<b>842</b>
<b>Ethylbenzene:</b>	ND < 12.5	ND < 0.5	<b>201</b>	ND < 0.5	ND < 40
<b>Toluene:</b>	ND < 12.5	ND < 0.5	<b>31.8</b>	ND < 0.5	ND < 40
<b>Xylenes:</b>	ND < 25.0	ND < 1.0	<b>21.4</b>	ND < 1.0	ND < 80
<b>MTBE:</b>	<b>8,110</b>	<b>27.6</b>	<b>1,440</b>	ND < 1.0	<b>10,000</b>
<b>DIPE:</b>	ND < 12.5	ND < 0.5	ND < 10	ND < 0.5	ND < 40
<b>TAME:</b>	<b>31.8</b>	<b>1.2</b>	<b>116</b>	ND < 0.5	<b>123</b>
<b>ETBE:</b>	ND < 12.5	ND < 0.5	ND < 10	ND < 0.5	ND < 40
<b>TBA:</b>	ND < 1,250	ND < 50	ND < 1,000	ND < 50.0	ND < 4,000
<b>TPHd:</b>	<b>74</b>	ND < 50	<b>5,860</b>	ND < 50	<b>238</b>
<b>TPHmo:</b>	<b>106</b>	<b>55</b>	ND < 150	<b>86</b>	<b>208</b>

## **COMMENTS AND RECOMMENDATIONS**

On April 5, 2005, the 11<sup>th</sup> groundwater monitoring event for the five on-site monitoring wells was conducted at the McKinleyville 76 at 2698 Central Avenue in McKinleyville, California. A summary of the results are presented below.

- The depth to groundwater in the five on-site wells ranged between 1.64 feet bgs to 2.95 feet bgs. Groundwater flow was towards the South Southwest at a gradient of 0.002 feet per foot.
- Groundwater samples from the five on-site wells were collected and analyzed for TPHg, BTXE, MTBE, TPHd, and TPHmo. Laboratory results reported TPHg in four wells at concentrations that ranged from 337 ppb (MW-2) to 12,200 ppb (MW-6). Benzene was reported in three wells at concentrations that ranged from 7.7 ppb (MW-2) to 842 ppb (MW-6). Toluene was reported in one well at a concentration of 31.8 ppb (MW-3). Xylenes was reported in one well at a concentration of 21.4 ppb (MW-3). Ethylbenzene was reported in one well at a concentration of 201 ppb (MW-3). MTBE was reported in all wells except MW-4, at concentrations that ranged from 27.6 ppb (MW-2) to 10,000 ppb (MW-6). TAME was reported in four wells at concentrations that ranged from 1.2 ppb (MW-2) to 123 ppb (MW-6). TPHd was reported in three wells at concentrations that ranged from 74 ppb (MW-1) to 5,860 (MW-3). TPHmo was reported in all wells except MW-3, at concentrations that ranged from 55 ppb (MW-2) to 208 ppb (MW-6).

Based upon these results the following observations and conclusions have been made.

- TPHg has been reported consistently in all wells except MW-4, for nearly all the sampling events thus far. Concentrations are fluctuating with levels in the range of  $10^4$  ppb appearing consistently in MW-1, MW-3, and MW-6.
- BTXE has been reported consistently in all wells except MW-4, for nearly all the sampling events thus far. Concentrations are fluctuating with benzene being the most frequently reported constituent. Benzene concentrations appear to be decreasing in well MW-3.
- MTBE was reported in wells MW-1, MW-3, and MW-6 at varying concentrations during every sampling event since the inception of the monitoring program. MTBE was reported in well MW-2 during all but one sampling event at varying concentrations. MTBE was reported in MW-4 at concentrations less than 5 ppb until the 2<sup>nd</sup> Quarter 2003 sampling event.
- DIPE has not been reported since the inception of the monitoring program.
- TAME was reported in well MW-3 at fluctuating concentrations during every sampling event thus far. TAME was reported in MW-1 and MW-6 during different sampling events at varying concentrations. TAME has not been reported in MW-4 since the 1<sup>st</sup> Quarter 2003 sampling event, and it has not been reported in MW-2 since the inception of the monitoring program.
- ETBE has not been reported since the inception of the monitoring program.
- TBA has appeared infrequently in wells MW-1, MW-3, and MW-6. TBA has not been reported in well MW-2 and MW-4.

- TPHd has appeared at fluctuating concentrations in all wells except MW-4, during most sampling events thus far. Overall, TPHd concentrations in wells MW-1 and MW-4 appear to be decreasing.
- TPHmo was reported in all wells at various times since the inception of the monitoring.

Based on the results of the April 2005 monitoring event and historical results, the following future activities are proposed.

- Groundwater monitoring will be continued until further notice. Groundwater level measurements will be collected from the five on-site monitoring wells to determine groundwater flow direction and gradient. Collected groundwater samples will be analyzed for TPHg, BTXE, five-fuel oxygenates, TPHd, and TPHmo.
- After acceptance of the *Excavation Report of Findings* by HCDEH, we will submit the *Subsurface Investigation Workplan Addendum #2* for delineating the down gradient MTBE plume as requested in a letter dated July 10, 2003, by HCDEH.



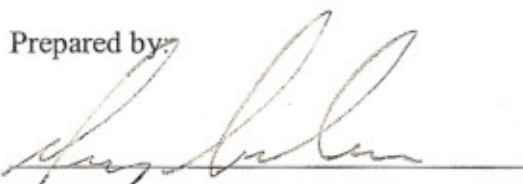
## CERTIFICATION

This report was prepared under the direct supervision of a California registered geologist at SounPacific. All information provided in this report including statements, conclusions and recommendations are based solely on field observations and analyses performed by a state-certified laboratory. SounPacific is not responsible for laboratory errors.

SounPacific promises to perform all its work in a manner that is used by members in similar professions working in the same geographic area. SounPacific will do whatever is reasonable to ensure that data collection is accurate. Please note however, that rain, buried utilities, and other factors can influence groundwater depths, directions and other factors beyond what SounPacific could reasonably determine.

### **SounPacific**

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## **ATTACHMENTS**

### **TABLES & CHARTS**

Table 1: Groundwater Analytical Results

Table 2: Water Levels

Chart 1: Hydrograph

### **FIGURES**

Figure 1: Aerial / Topo Map

Figure 2: Site Plan

Figure 3: Groundwater Elevation Contour Map April 2005

Figure 4: Groundwater Analytical Results

Figure 5: MW-1 Hydrocarbon Concentrations vs. Time

Figure 6: MW-2 Hydrocarbon Concentrations vs. Time

Figure 7: MW-3 Hydrocarbon Concentrations vs. Time

Figure 8: MW-4 Hydrocarbon Concentrations vs. Time

Figure 9: MW-6 Hydrocarbon Concentrations vs. Time

### **APPENDICES**

Appendix A: Laboratory Report and Chain-of-Custody Form

Appendix B: Standard Operating Procedures

Appendix C: Field Notes

# Tables & Chart

**Table 1**  
**Water Levels**  
 McKinleyville 76  
 2698 Central Avenue  
 McKinleyville, California 95519

Sample Location	Date	Depth to Bottom/ Feet BGS	Survey Height/ Feet Above MSL	Depth to Water/ Feet BGS	Adjusted Elevation/ Feet Above MSL
MW-1	6/25/2002	12.52	114.23	5.39	108.84
	7/25/2002	12.51	114.23	6.21	108.02
	8/14/2002	12.51	114.23	6.56	107.67
	9/16/2002	12.49	114.23	6.92	107.31
	10/21/2002	12.53	114.23	7.26	106.97
	11/21/2002	11.26	114.23	6.54	107.69
	12/21/2002	12.48	114.23	2.01	112.22
	1/22/2003	11.54	114.23	2.88	111.35
	2/26/2003	12.51	114.23	2.90	111.33
	3/28/2003	12.51	114.23	2.28	111.95
	4/28/2003	12.51	114.23	1.70	112.53
	5/28/2003	12.51	114.23	3.99	110.24
	6/27/2003	12.63	114.23	5.10	109.13
	9/25/2003	12.63	114.23	6.59	107.64
	12/29/2003	12.63	114.23	1.22	113.01
	3/30/2004	12.63	114.23	2.80	111.43
	6/28/2004	12.60	114.23	5.68	108.55
	9/30/2004	12.60	114.23	7.06	107.17
	12/20/2004	12.55	114.23	3.41	110.82
	4/5/2005	12.55	114.23	2.23	112.00
MW-2	6/25/2002	13.41	113.81	4.75	109.06
	7/25/2002	13.43	113.81	5.62	108.19
	8/14/2002	13.42	113.81	6.02	107.79
	9/16/2002	13.42	113.81	6.38	107.43
	10/21/2002	13.39	113.81	6.71	107.10
	11/21/2002	12.54	113.81	6.08	107.73
	12/21/2002	13.49	113.81	1.42	112.39
	1/22/2003	12.71	113.81	2.50	111.31
	2/26/2003	13.24	113.81	2.35	111.46
	3/28/2003	13.24	113.81	1.76	112.05
	4/28/2003	13.24	113.81	1.27	112.54
	5/28/2003	13.24	113.81	3.44	110.37
	6/27/2003	13.57	113.81	4.50	109.31
	9/25/2003	13.57	113.81	6.02	107.79
	12/29/2003	NT	113.81	NT	NT
	3/30/2004	13.57	113.81	2.09	111.72
	6/28/2004	13.37	113.81	5.06	108.75
	9/30/2004	13.20	113.81	6.49	107.32
	12/20/2004	13.15	113.81	2.61	111.20
	4/5/2005	12.97	113.81	1.64	112.17

**Table 1 (cont.)****Water Levels**

McKinleyville 76

2698 Central Avenue

McKinleyville, California 95519

Sample Location	Date	Depth to Bottom/ Feet BGS	Survey Height/ Feet Above MSL	Depth to Water/ Feet BGS	Adjusted Elevation/ Feet Above MSL
MW-3	6/25/2002	11.28	114.78	5.81	108.97
	7/25/2002	13.22	114.78	7.64	107.14
	8/14/2002	13.24	114.78	7.48	107.30
	9/16/2002	13.26	114.78	7.39	107.39
	10/21/2002	11.24	114.78	7.76	107.02
	11/21/2002	13.31	114.78	5.45	109.33
	12/21/2002	11.18	114.78	2.33	112.45
	1/22/2003	13.52	114.78	1.95	112.83
	2/26/2003	11.31	114.78	3.27	111.51
	3/28/2003	11.31	114.78	2.59	112.19
	4/28/2003	11.31	114.78	2.05	112.73
	5/28/2003	11.31	114.78	4.42	110.36
	6/27/2003	11.33	114.78	5.51	109.27
	9/25/2003	11.33	114.78	7.03	107.75
	12/29/2003	11.33	114.78	1.50	113.28
	3/30/2004	11.33	114.78	3.18	111.60
	6/28/2004	11.30	114.78	6.09	108.69
	9/30/2004	11.25	114.78	7.55	107.23
	12/20/2004	11.26	114.78	3.56	111.22
	4/5/2005	11.21	114.78	2.54	112.24
MW-4	6/25/2002	12.34	115.18	6.31	108.87
	7/25/2002	12.32	115.18	7.10	108.08
	8/14/2002	12.32	115.18	7.52	107.66
	9/16/2002	12.31	115.18	7.85	107.33
	10/21/2002	12.31	115.18	8.21	106.97
	11/21/2002	12.32	115.18	7.05	108.13
	12/21/2002	12.22	115.18	2.69	112.49
	1/22/2003	12.57	115.18	3.27	111.91
	2/26/2003	12.29	115.18	3.71	111.47
	3/28/2003	12.29	115.18	3.02	112.16
	4/28/2003	12.29	115.18	2.41	112.77
	5/28/2003	12.29	115.18	4.88	110.30
	6/27/2003	12.38	115.18	5.99	109.19
	9/25/2003	12.38	115.18	7.50	107.68
	12/29/2003	12.38	115.18	1.78	113.40
	3/30/2004	12.38	115.18	3.60	111.58
	6/28/2004	12.33	115.18	6.59	108.59
	9/30/2004	12.25	115.18	8.00	107.18
	12/20/2004	12.23	115.18	4.24	110.94
	4/5/2004	12.20	115.18	2.95	112.23

**Table 1 (cont.)**  
**Water Levels**  
 McKinleyville 76  
 2698 Central Avenue  
 McKinleyville, California 95519

Sample Location	Date	Depth to Bottom/ Feet BGS	Survey Height/ Feet Above MSL	Depth to Water/ Feet BGS	Adjusted Elevation/ Feet Above MSL
MW-5	6/25/2002	12.42	114.47	5.48	108.99
	7/25/2002	12.39	114.47	6.35	108.12
	8/14/2002	12.39	114.47	7.12	107.35
	9/16/2002	12.40	114.47	7.12	107.35
	10/21/2002	12.41	114.47	7.49	106.98
	11/21/2002	12.43	114.47	6.36	108.11
	12/21/2002	12.36	114.47	2.11	112.36
	1/22/2003	12.41	114.47	2.59	111.88
	2/26/2003	12.45	114.47	3.00	111.47
	3/28/2003	12.45	114.47	2.36	112.11
	4/28/2003	12.45	114.47	1.84	112.63
	5/28/2003	12.45	114.47	4.11	110.36
	6/27/2003	12.57	114.47	5.21	109.26
	9/25/2003	12.57	114.47	6.71	107.76
MW-6	6/25/2002	12.31	114.70	5.86	108.84
	7/25/2002	12.26	114.70	6.65	108.05
	8/14/2002	12.27	114.70	6.97	107.73
	9/16/2002	12.27	114.70	7.40	107.30
	10/21/2002	12.26	114.70	7.74	106.96
	11/21/2002	12.23	114.70	6.58	108.12
	12/21/2002	12.16	114.70	2.39	112.31
	1/22/2003	12.44	114.70	2.87	111.83
	2/26/2003	12.21	114.70	3.29	111.41
	3/28/2003	12.21	114.70	2.68	112.02
	4/28/2003	12.21	114.70	2.07	112.63
	5/28/2003	12.21	114.70	4.45	110.25
	6/27/2003	12.36	114.70	5.56	109.14
	9/25/2003	12.36	114.70	7.05	107.65
	12/29/2003	12.36	114.70	1.54	113.16
	3/30/2004	12.36	114.70	3.22	111.48
	6/28/2004	12.27	114.70	6.13	108.57
	9/30/2004	12.23	114.70	7.54	107.16
	12/20/2004	12.21	114.70	3.86	110.84
	4/5/2005	12.19	114.70	2.62	112.08

**Table 2**  
**Quarterly Groundwater Analytical Results**  
 McKinleyville 76  
 2698 Central Avenue  
 McKinleyville, California 95519

Sample Location	Sample Event	Annual Quarter	Sample Date	TPHg (ppb)	Benzene (ppb)	Toluene (ppb)	Xylenes (ppb)	Ethylbenzene (ppb)	MTBE (ppb)	DIPE (ppb)	TAME (ppb)	ETBE (ppb)	TBA (ppb)	Methanol (ppb)	Ethanol (ppb)	TPHd (ppb)	TPHmo (ppb)
MW-1	Well Installation	Second Quarter	6/25/2002	23,000	230	ND < 0.3	1.4	0.7	45,400	ND < 0.5	58	ND < 0.5	ND < 100	----	----	676	600
	First Quarterly	Third Quarter	9/16/2002	30,600	89.4	ND < 0.3	1.3	1.3	130,000	ND < 0.5	43.4	ND < 0.5	ND < 100	----	----	722	ND < 50
	Second Quarterly	Fourth Quarter	12/21/2002	ND < 50	ND < 50	ND < 50	ND < 100	ND < 50	7,600	ND < 50	ND < 50	ND < 50	ND < 500	----	----	ND < 50	ND < 500
	Third Quarterly	First Quarter	3/28/2003	4,200	1,200	ND < 50	ND < 100	ND < 50	33,000	ND < 50	ND < 50	ND < 50	ND < 500	ND < 5.0	ND < 1,300	440	ND < 500
	Fourth Quarterly	Second Quarter	6/27/2003	37,000	4,000	ND < 500	ND < 1,000	ND < 500	81,000	ND < 500	ND < 500	ND < 500	ND < 5,000	ND < 5.0	ND < 13,000	120	ND < 500
	Fifth Quarterly	Third Quarter	9/25/2003	ND < 40,000	23,000	ND < 500	ND < 1,000	ND < 500	72,000	ND < 500	ND < 500	ND < 500	ND < 5,000	ND < 5.0	ND < 20,000	900	ND < 500
	Sixth Quarterly	Fourth Quarter	12/29/2003	2,800	ND < 500	ND < 500	ND < 1,000	ND < 500	31,000	ND < 500	ND < 500	ND < 500	ND < 5,000	ND < 5.0	ND < 20,000	120	ND < 500
	Seventh Quarterly	First Quarter	3/30/2004	29,000	ND < 50	ND < 50	ND < 100	ND < 50	65,000	ND < 50	150	ND < 50	23,000	----	----	750	ND < 500
	Eighth Quarterly	Second Quarter	6/28/2004	44,000	2,100	ND < 50	ND < 100	ND < 50	100,000	ND < 50	130	ND < 50	ND < 500	----	----	870	ND < 500
	Ninth Quarterly	Third Quarter	9/30/2004	24,000	670	ND < 50	ND < 150	ND < 50	50,000	ND < 50	61	ND < 50	ND < 500	----	----	370	ND < 500
	Tenth Quarterly	Fourth Quarter	12/20/2004	ND < 2,000	ND < 20.0	ND < 20.0	ND < 40.0	ND < 20.0	2,080	ND < 20.0	ND < 200	ND < 200	ND < 2,000	----	----	103	122
MW-2	Eleventh Quarterly	First Quarter	4/5/2005	6,810	ND < 12.5	ND < 12.5	ND < 12.5	ND < 12.5	8,110	ND < 12.5	31.8	ND < 12.5	ND < 1,250	----	----	74	106
	Well Installation	Second Quarter	6/25/2002	4,650	255	108	1,010	289	108	ND < 0.5	ND < 0.5	ND < 0.5	ND < 100	----	----	883	596
	First Quarterly	Third Quarter	9/16/2002	886	91.4	23.5	162	15.4	17.1	ND < 0.5	ND < 0.5	ND < 0.5	ND < 100	----	----	382	ND < 50
	Second Quarterly	Fourth Quarter	12/21/2002	220	12	3.6	11.3	0.6	ND < 0.5	ND < 50	ND < 0.5	ND < 0.5	ND < 5.0	----	----	85	ND < 500
	Third Quarterly	First Quarter	3/28/2003	92	12	1.1	1.2	ND < 0.5	4.0	ND < 0.5	ND < 0.5	ND < 0.5	ND < 5.0	ND < 5.0	ND < 13	ND < 50	ND < 500
	Fourth Quarterly	Second Quarter	6/27/2003	1,700	190	36	189.7	100	16	ND < 0.5	ND < 0.5	ND < 0.5	ND < 5.0	ND < 5.0	ND < 13	330	ND < 500
	Fifth Quarterly	Third Quarter	9/25/2003	850	46	ND < 5.0	12	ND < 5.0	10	ND < 5.0	ND < 5.0	ND < 5.0	ND < 5.0	ND < 5.0	ND < 200	320	ND < 500
	Sixth Quarterly	Fourth Quarter	12/29/2003	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	Seventh Quarterly	First Quarter	3/30/2004	140	14	0.5	0.8	ND < 0.5	12	ND < 0.5	ND < 0.5	ND < 0.5	ND < 5.0	----	----	110	ND < 500
	Eighth Quarterly	Second Quarter	6/28/2004	2,900	100	22	252	52	71	ND < 0.5	ND < 0.5	ND < 0.5	ND < 5.0	----	----	750	ND < 500
	Ninth Quarterly	Third Quarter	9/30/2004	790	29	ND < 5.0	25	ND < 5.0	26	ND < 5	ND < 5	ND < 5	ND < 50	----	----	170	ND < 500
	Tenth Quarterly	Fourth Quarter	12/20/2004	2,990	91.4	89.1	394	178	615	ND < 4.0	ND < 40.0	ND < 40.0	ND < 400	----	----	642	ND < 50
MW-3	Eleventh Quarterly	First Quarter	4/5/2005	337	7.7	ND < 0.5	ND < 1.0	ND < 0.5	27.6	ND < 0.5	1.2	ND < 0.5	ND < 50	----	----	ND < 50	55
	Well Installation	Second Quarter	6/25/2002	11,600	1,530	84.6	126	520	7,320	ND < 0.5	720	ND < 0.5	ND < 100	----	----	2,420	597
	First Quarterly	Third Quarter	9/16/2002	9,210	1,140	93.4	77	405	5,160	ND < 0.5	578	ND < 0.5	ND < 100	----	----	3500	ND < 50
	Second Quarterly	Fourth Quarter	12/21/2002	24,000	1,200	180	1,337	960	12,000	ND < 50	750	ND < 50	ND < 500	----	----	1300	ND < 500
	Third Quarterly	First Quarter	3/28/2003	7,800	860	ND < 50	ND < 100	88	6,100	ND < 50	410	ND < 50	ND < 500	ND < 5.0	ND < 1,300	4,000	ND < 500
	Fourth Quarterly	Second Quarter	6/27/2003	12,000	750	ND < 50	ND < 100	190	3,100	ND < 50	190	ND < 50	ND < 500	ND < 5.0	ND < 1,300	5,100	ND < 500
	Fifth Quarterly	Third Quarter	9/25/2003	17,000	1,200	79	54	330	2,100	ND < 50	280	ND < 50	ND < 500	ND < 5.0	ND < 2,000	7,200	ND < 500
	Sixth Quarterly	Fourth Quarter	12/29/2003	17,000	1,700	120	170	1,200	6,000	ND < 50	540	ND < 50	2,700	ND < 5.0	ND < 2,000	ND < 50	ND < 500
	Seventh Quarterly	First Quarter	3/30/2004	15,000	810	43	34	300	1,600	ND < 5.0	200	ND < 5.0	1,500	----	----	7,300	ND < 500
	Eighth Quarterly	Second Quarter	6/28/2004	14,000	720	72	64	370	600	ND < 50	90	ND < 50	ND < 500	----	----	7,000	ND < 500
	Ninth Quarterly	Third Quarter	9/30/2004	9,300	660	62	37	190	790	ND < 0.5	69	ND < 0.5	600	----	----	3,000	ND < 500
	Tenth Quarterly	Fourth Quarter	12/20/2004	7,980	528	64.8	82.8	628	1,280	ND < 10.0	124	ND < 100	ND < 1,000	----	----	5,910	250
MW-3	Eleventh Quarterly	First Quarter	4/5/2005	8,190	347	31.8	21.4	201	1,440	ND < 10.0	116	ND < 10	ND < 1,000	----	----	5,860	ND < 150

**Notes:**

TPHg: Total petroleum hydrocarbons as gasoline.

MTBE: Methyl tertiary butyl ether

DIPE: Diisopropyl Ether

TAME: Tertiary amyl methyl ether

ETBE: Ethyl tertiary butyl ether

TBA: Tertiary butanol

TPHd: Total petroleum hydrocarbons as diesel

TPHmo: Total petroleum hydrocarbons as motor oil

ppb: parts per billion = µg/l = .001 mg/l = 0.001 ppm.

ND: Not detected at or below the method detection limit as shown.

**Table 2 (cont.)**  
**Quarterly Groundwater Analytical Results**  
 McKinleyville 76  
 2698 Central Avenue  
 McKinleyville, California 95519

Sample Location	Sample Event	Annual Quarter	Sample Date	TPHg (ppb)	Benzene (ppb)	Toluene (ppb)	Xylenes (ppb)	Ethylbenzene (ppb)	MTBE (ppb)	DIPE (ppb)	TAME (ppb)	ETBE (ppb)	TBA (ppb)	Methanol (ppb)	Ethanol (ppb)	TPHd (ppb)	TPHmo (ppb)
MW-4	Well Installation	Second Quarter	6/25/2002	ND < 50	ND < 0.3	ND < 0.3	ND < 0.6	ND < 0.3	<b>3.9</b>	ND < 0.5	<b>5.6</b>	ND < 0.5	ND < 100	----	----	<b>199</b>	ND < 50
	First Quarterly	Third Quarter	9/16/2002	ND < 50	ND < 0.3	ND < 0.3	ND < 0.6	ND < 0.3	ND < 2	ND < 0.5	ND < 0.5	ND < 0.5	ND < 100	----	----	ND < 50	ND < 50
	Second Quarterly	Fourth Quarter	12/21/2002	ND < 50	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	<b>4.8</b>	ND < 50	<b>3.8</b>	ND < 0.5	ND < 5.0	----	----	ND < 50	ND < 500
	Third Quarterly	First Quarter	3/28/2003	ND < 50	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	<b>2.8</b>	ND < 0.5	<b>3.9</b>	ND < 0.5	ND < 5.0	ND < 5.0	ND < 0.5	ND < 50	ND < 500
	Fourth Quarterly	Second Quarter	6/27/2003	ND < 50	ND < 0.5	ND < 0.5	ND < 1	ND < 0.5	<b>0.7</b>	ND < 0.5	ND < 0.5	ND < 0.5	ND < 5.0	ND < 5.0	ND < 13	ND < 50	ND < 500
	Fifth Quarterly	Third Quarter	9/25/2003	ND < 50	ND < 0.5	ND < 0.5	ND < 1	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 5.0	ND < 5.0	ND < 20	ND < 50	ND < 500
	Sixth Quarterly	Fourth Quarter	12/29/2003	ND < 50	ND < 0.5	ND < 0.5	ND < 1	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 5.0	ND < 5.0	ND < 5.0	ND < 50	ND < 500
	Seventh Quarterly	First Quarter	3/30/2004	ND < 50	ND < 0.5	ND < 0.5	ND < 1	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 5.0	----	----	<b>97</b>	ND < 500
	Eighth Quarterly	Second Quarter	6/28/2004	ND < 50	ND < 0.5	ND < 0.5	ND < 1	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 5.0	----	----	ND < 50	ND < 500
	Ninth Quarterly	Third Quarter	9/30/2004	ND < 50	ND < 0.5	ND < 0.5	ND < 1.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 5.0	----	----	<b>67</b>	ND < 500
	Tenth Quarterly	Fourth Quarter	12/20/2004	ND < 50	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	ND < 1.0	ND < 0.5	ND < 5.0	ND < 5.0	ND < 50.0	----	----	ND < 50	<b>52</b>
	Eleventh Quarterly	First Quarter	4/5/2005	ND < 50	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	ND < 1.0	ND < 0.5	ND < 0.5	ND < 0.5	ND < 50.0	----	----	ND < 50	<b>86</b>
MW-5	Well Installation	Second Quarter	6/25/2002	<b>168,000</b>	<b>21,300</b>	<b>22,500</b>	<b>13,900</b>	<b>2,580</b>	<b>571,000</b>	ND < 0.5	<b>689</b>	ND < 0.5	ND < 100	----	----	<b>2,580</b>	ND < 50
	First Quarterly	Third Quarter	9/16/2002	<b>246,000</b>	<b>36,900</b>	<b>37,000</b>	<b>14,100</b>	<b>4,500</b>	<b>540,000</b>	ND < 0.5	<b>2,530</b>	ND < 0.5	----	----	----	<b>10,200</b>	ND < 50
	Second Quarterly	Fourth Quarter	12/21/2002	<b>11,000</b>	<b>120</b>	<b>110</b>	<b>650</b>	<b>120</b>	<b>1,100</b>	ND < 50	ND < 50	ND < 50	ND < 500	----	----	<b>930</b>	ND < 500
	Third Quarterly	First Quarter	3/28/2003	<b>43,000</b>	<b>2,900</b>	<b>2,600</b>	<b>2,500</b>	<b>580</b>	<b>78,000</b>	ND < 50	<b>180</b>	ND < 50	ND < 500	ND < 5.0	ND < 1,300	<b>4,600</b>	ND < 500
	Fourth Quarterly	Second Quarter	6/27/2003	<b>230,000</b>	<b>25,000</b>	<b>27,000</b>	<b>13,300</b>	<b>2,700</b>	<b>280,000</b>	ND < 500	<b>1,500</b>	ND < 500	ND < 5,000	ND < 5.0	ND < 13,000	<b>9,600</b>	ND < 500
	Fifth Quarterly	Third Quarter	9/25/2003	<b>210,000</b>	<b>24,000</b>	<b>24,000</b>	<b>11,400</b>	<b>2,400</b>	<b>320,000</b>	ND < 500	<b>2,500</b>	ND < 500	ND < 5,000	ND < 5.0	ND < 20,000	ND < 50	ND < 500
MW-6	Well Installation	Second Quarter	6/25/2002	<b>11,900</b>	<b>2,370</b>	<b>0.8</b>	<b>5.4</b>	<b>0.8</b>	<b>22,600</b>	ND < 0.5	<b>274</b>	ND < 0.5	ND < 100	----	----	<b>295</b>	ND < 50
	First Quarterly	Third Quarter	9/16/2002	<b>44,700</b>	<b>11,500</b>	<b>1,470</b>	<b>357</b>	<b>802</b>	<b>61,600</b>	ND < 0.5	<b>715</b>	ND < 0.5	ND < 100	----	----	<b>729</b>	ND < 50
	Second Quarterly	Fourth Quarter	12/21/2002	<b>17,000</b>	<b>5,500</b>	ND < 500	ND < 1,000	ND < 500	<b>67,000</b>	ND < 500	ND < 500	ND < 500	ND < 5,000	----	----	<b>440</b>	ND < 500
	Third Quarterly	First Quarter	3/28/2003	<b>270</b>	ND < 500	ND < 500	ND < 1,000	ND < 500	<b>1,200</b>	ND < 500	ND < 500	ND < 500	ND < 5,000	----	----	----	ND < 500
	Fourth Quarterly	Second Quarter	6/27/2003	ND < 50	<b>5.4</b>	<b>0.6</b>	ND < 1	ND < 0.5	<b>80</b>	ND < 0.5	<b>11</b>	ND < 0.5	ND < 5.0	ND < 5.0	ND < 13	ND < 50	ND < 500
	Fifth Quarterly	Third Quarter	9/25/2003	<b>11,000</b>	<b>1,500</b>	ND < 0.5	<b>2.4</b>	ND < 0.5	<b>17,000</b>	ND < 50	<b>280</b>	ND < 50	<b>1,200</b>	ND < 5.0	ND < 200	<b>73</b>	ND < 500
	Sixth Quarterly	Fourth Quarter	12/29/2003	<b>5,100</b>	<b>1,200</b>	ND < 500	ND < 1,000	ND < 500	<b>29,000</b>	ND < 500	ND < 500	ND < 500	ND < 5,000	ND < 5.0	ND < 20,000	ND < 50	ND < 500
	Seventh Quarterly	First Quarter	3/30/2004	<b>1,600</b>	<b>100</b>	ND < 5.0	ND < 10.0	ND < 5.0	<b>1,500</b>	ND < 5.0	<b>36</b>	ND < 5.0	<b>440</b>	----	----	<b>120</b>	ND < 500
	Eighth Quarterly	Second Quarter	6/28/2004	<b>5,700</b>	<b>460</b>	ND < 50	ND < 100	ND < 50	<b>6,000</b>	ND < 50	<b>230</b>	ND < 50	ND < 500	----	----	<b>82</b>	ND < 500
	Ninth Quarterly	Third Quarter	9/30/2004	<b>37,000</b>	<b>4,400</b>	ND < 50	ND < 150	ND < 50	<b>59,000</b>	ND < 50	<b>370</b>	ND < 50	<b>4,600</b>	----	----	<b>450</b>	ND < 500
	Tenth Quarterly	Fourth Quarter	12/20/2004	<b>50,500</b>	<b>4,210</b>	ND < 400	ND < 800	ND < 400	<b>58,100</b>	ND < 400	ND < 4,000	ND < 4,000	ND < 40,000	----	----	<b>488</b>	<b>114</b>
	Eleventh Quarterly	First Quarterly	4/5/2005	<b>12,200</b>	<b>842</b>	ND < 40	ND < 80	ND < 40	<b>10,000</b>	ND < 40	<b>123</b>	ND < 40	ND < 4,000	----	----	<b>238</b>	<b>208</b>

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**Table 2**  
**Quarterly Groundwater Analytical Results**  
 McKinleyville 76  
 2698 Central Avenue  
 McKinleyville, California 95519

Sample Location	Sample Event	Annual Quarter	Sample Date	TPHg (ppb)	Benzene (ppb)	Toluene (ppb)	Xylenes (ppb)	Ethylbenzene (ppb)	MTBE (ppb)	DIPE (ppb)	TAME (ppb)	ETBE (ppb)	TBA (ppb)	Methanol (ppb)	Ethanol (ppb)	TPHd (ppb)	TPHmo (ppb)
MW-1	Well Installation	Second Quarter	6/25/2002	23,000	230	ND < 0.3	1.4	0.7	45,400	ND < 0.5	58	ND < 0.5	ND < 100	----	----	676	600
	First Quarterly	Third Quarter	9/16/2002	30,600	89.4	ND < 0.3	1.3	1.3	130,000	ND < 0.5	43.4	ND < 0.5	ND < 100	----	----	722	ND < 50
	Second Quarterly	Fourth Quarter	12/21/2002	ND < 50	ND < 50	ND < 50	ND < 100	ND < 50	7,600	ND < 50	ND < 50	ND < 50	ND < 500	----	----	ND < 50	ND < 500
	Third Quarterly	First Quarter	3/28/2003	4,200	1,200	ND < 50	ND < 100	ND < 50	33,000	ND < 50	ND < 50	ND < 50	ND < 500	ND < 5.0	ND < 1,300	440	ND < 500
	Fourth Quarterly	Second Quarter	6/27/2003	37,000	4,000	ND < 500	ND < 1,000	ND < 500	81,000	ND < 500	ND < 500	ND < 500	ND < 5,000	ND < 5.0	ND < 13,000	120	ND < 500
	Fifth Quarterly	Third Quarter	9/25/2003	ND < 40,000	23,000	ND < 500	ND < 1,000	ND < 500	72,000	ND < 500	ND < 500	ND < 500	ND < 5,000	ND < 5.0	ND < 20,000	900	ND < 500
	Sixth Quarterly	Fourth Quarter	12/29/2003	2,800	ND < 500	ND < 500	ND < 1,000	ND < 500	31,000	ND < 500	ND < 500	ND < 500	ND < 5,000	ND < 5.0	ND < 20,000	120	ND < 500
	Seventh Quarterly	First Quarter	3/30/2004	29,000	ND < 50	ND < 50	ND < 100	ND < 50	65,000	ND < 50	150	ND < 50	23,000	----	----	750	ND < 500
	Eighth Quarterly	Second Quarter	6/28/2004	44,000	2,100	ND < 50	ND < 100	ND < 50	100,000	ND < 50	130	ND < 50	ND < 500	----	----	870	ND < 500
	Ninth Quarterly	Third Quarter	9/30/2004	24,000	670	ND < 50	ND < 150	ND < 50	50,000	ND < 50	61	ND < 50	ND < 500	----	----	370	ND < 500
	Tenth Quarterly	Fourth Quarter	12/20/2004	ND < 2,000	ND < 20.0	ND < 20.0	ND < 40.0	ND < 20.0	2,080	ND < 20.0	ND < 200	ND < 200	ND < 2,000	----	----	103	122
MW-2	Eleventh Quarterly	First Quarter	4/5/2005	6,810	ND < 12.5	ND < 12.5	ND < 12.5	ND < 12.5	8,110	ND < 12.5	31.8	ND < 12.5	ND < 1,250	----	----	74	106
	Well Installation	Second Quarter	6/25/2002	4,650	255	108	1,010	289	108	ND < 0.5	ND < 0.5	ND < 0.5	ND < 100	----	----	883	596
	First Quarterly	Third Quarter	9/16/2002	886	91.4	23.5	162	15.4	17.1	ND < 0.5	ND < 0.5	ND < 0.5	ND < 100	----	----	382	ND < 50
	Second Quarterly	Fourth Quarter	12/21/2002	220	12	3.6	11.3	0.6	ND < 0.5	ND < 50	ND < 0.5	ND < 0.5	ND < 5.0	----	----	85	ND < 500
	Third Quarterly	First Quarter	3/28/2003	92	12	1.1	1.2	ND < 0.5	4.0	ND < 0.5	ND < 0.5	ND < 0.5	ND < 5.0	ND < 5.0	ND < 13	ND < 50	ND < 500
	Fourth Quarterly	Second Quarter	6/27/2003	1,700	190	36	189.7	100	16	ND < 0.5	ND < 0.5	ND < 0.5	ND < 5.0	ND < 5.0	ND < 13	330	ND < 500
	Fifth Quarterly	Third Quarter	9/25/2003	850	46	ND < 5.0	12	ND < 5.0	10	ND < 5.0	ND < 5.0	ND < 5.0	ND < 5.0	ND < 5.0	ND < 200	320	ND < 500
	Sixth Quarterly	Fourth Quarter	12/29/2003	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	Seventh Quarterly	First Quarter	3/30/2004	140	14	0.5	0.8	ND < 0.5	12	ND < 0.5	ND < 0.5	ND < 0.5	ND < 5.0	----	----	110	ND < 500
	Eighth Quarterly	Second Quarter	6/28/2004	2,900	100	22	252	52	71	ND < 0.5	ND < 0.5	ND < 0.5	ND < 5.0	----	----	750	ND < 500
	Ninth Quarterly	Third Quarter	9/30/2004	790	29	ND < 5.0	25	ND < 5.0	26	ND < 5	ND < 5	ND < 5	ND < 50	----	----	170	ND < 500
	Tenth Quarterly	Fourth Quarter	12/20/2004	2,990	91.4	89.1	394	178	615	ND < 4.0	ND < 40.0	ND < 40.0	ND < 400	----	----	642	ND < 50
MW-3	Eleventh Quarterly	First Quarter	4/5/2005	337	7.7	ND < 0.5	ND < 1.0	ND < 0.5	27.6	ND < 0.5	1.2	ND < 0.5	ND < 50	----	----	ND < 50	55
	Well Installation	Second Quarter	6/25/2002	11,600	1,530	84.6	126	520	7,320	ND < 0.5	720	ND < 0.5	ND < 100	----	----	2,420	597
	First Quarterly	Third Quarter	9/16/2002	9,210	1,140	93.4	77	405	5,160	ND < 0.5	578	ND < 0.5	ND < 100	----	----	3500	ND < 50
	Second Quarterly	Fourth Quarter	12/21/2002	24,000	1,200	180	1,337	960	12,000	ND < 50	750	ND < 50	ND < 500	----	----	1300	ND < 500
	Third Quarterly	First Quarter	3/28/2003	7,800	860	ND < 50	ND < 100	88	6,100	ND < 50	410	ND < 50	ND < 500	ND < 5.0	ND < 1,300	4,000	ND < 500
	Fourth Quarterly	Second Quarter	6/27/2003	12,000	750	ND < 50	ND < 100	190	3,100	ND < 50	190	ND < 50	ND < 500	ND < 5.0	ND < 1,300	5,100	ND < 500
	Fifth Quarterly	Third Quarter	9/25/2003	17,000	1,200	79	54	330	2,100	ND < 50	280	ND < 50	ND < 500	ND < 5.0	ND < 2,000	7,200	ND < 500
	Sixth Quarterly	Fourth Quarter	12/29/2003	17,000	1,700	120	170	1,200	6,000	ND < 50	540	ND < 50	2,700	ND < 5.0	ND < 2,000	ND < 50	ND < 500
	Seventh Quarterly	First Quarter	3/30/2004	15,000	810	43	34	300	1,600	ND < 5.0	200	ND < 5.0	1,500	----	----	7,300	ND < 500
	Eighth Quarterly	Second Quarter	6/28/2004	14,000	720	72	64	370	600	ND < 50	90	ND < 50	ND < 500	----	----	7,000	ND < 500
	Ninth Quarterly	Third Quarter	9/30/2004	9,300	660	62	37	190	790	ND < 0.5	69	ND < 0.5	600	----	----	3,000	ND < 500
	Tenth Quarterly	Fourth Quarter	12/20/2004	7,980	528	64.8	82.8	628	1,280	ND < 10.0	124	ND < 100	ND < 1,000	----	----	5,910	250
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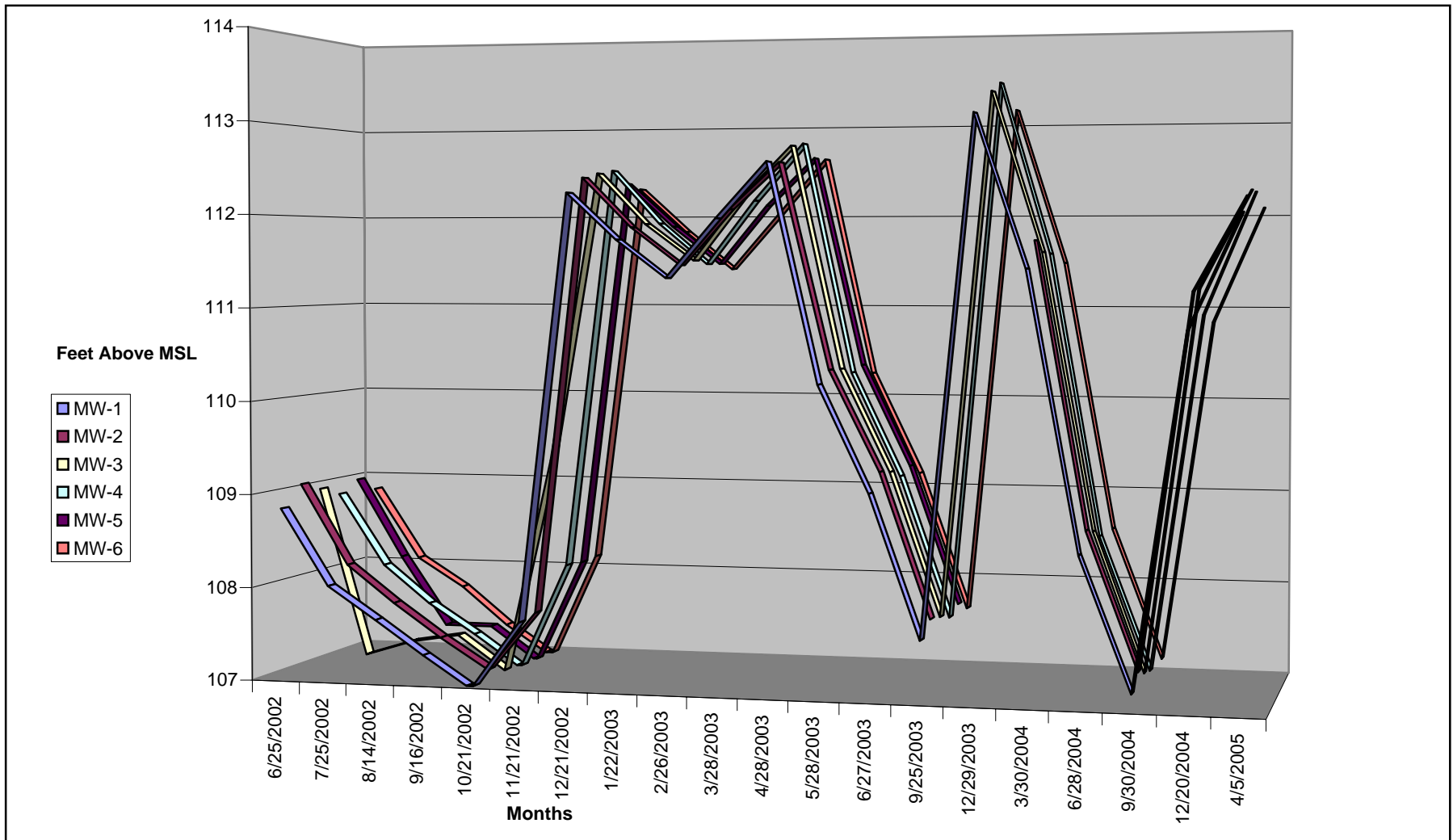
TPHd: Total petroleum hydrocarbons as diesel

TPHmo: Total petroleum hydrocarbons as motor oil

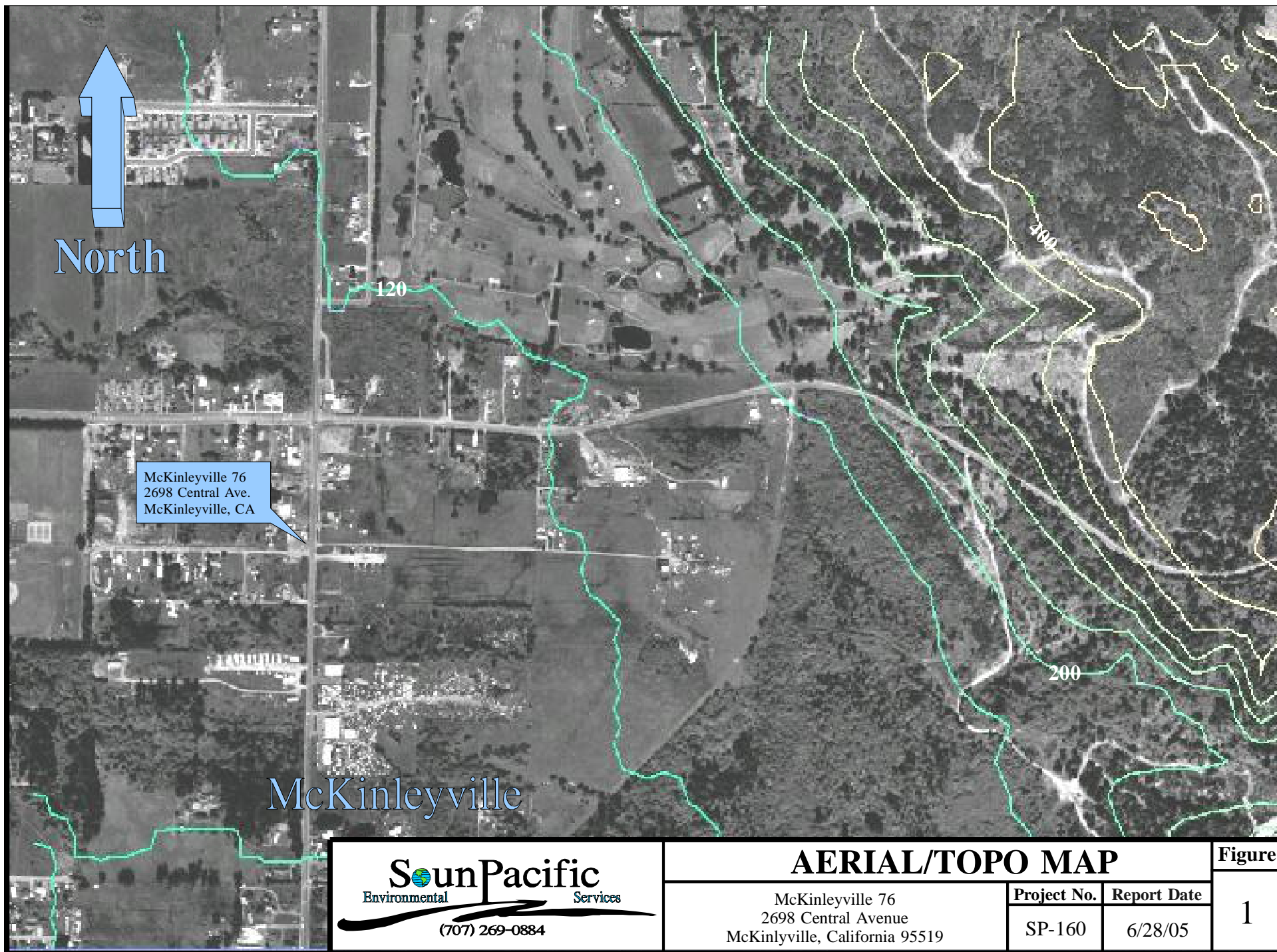
ppb: parts per billion = µg/l = .001 mg/l = 0.001 ppm.

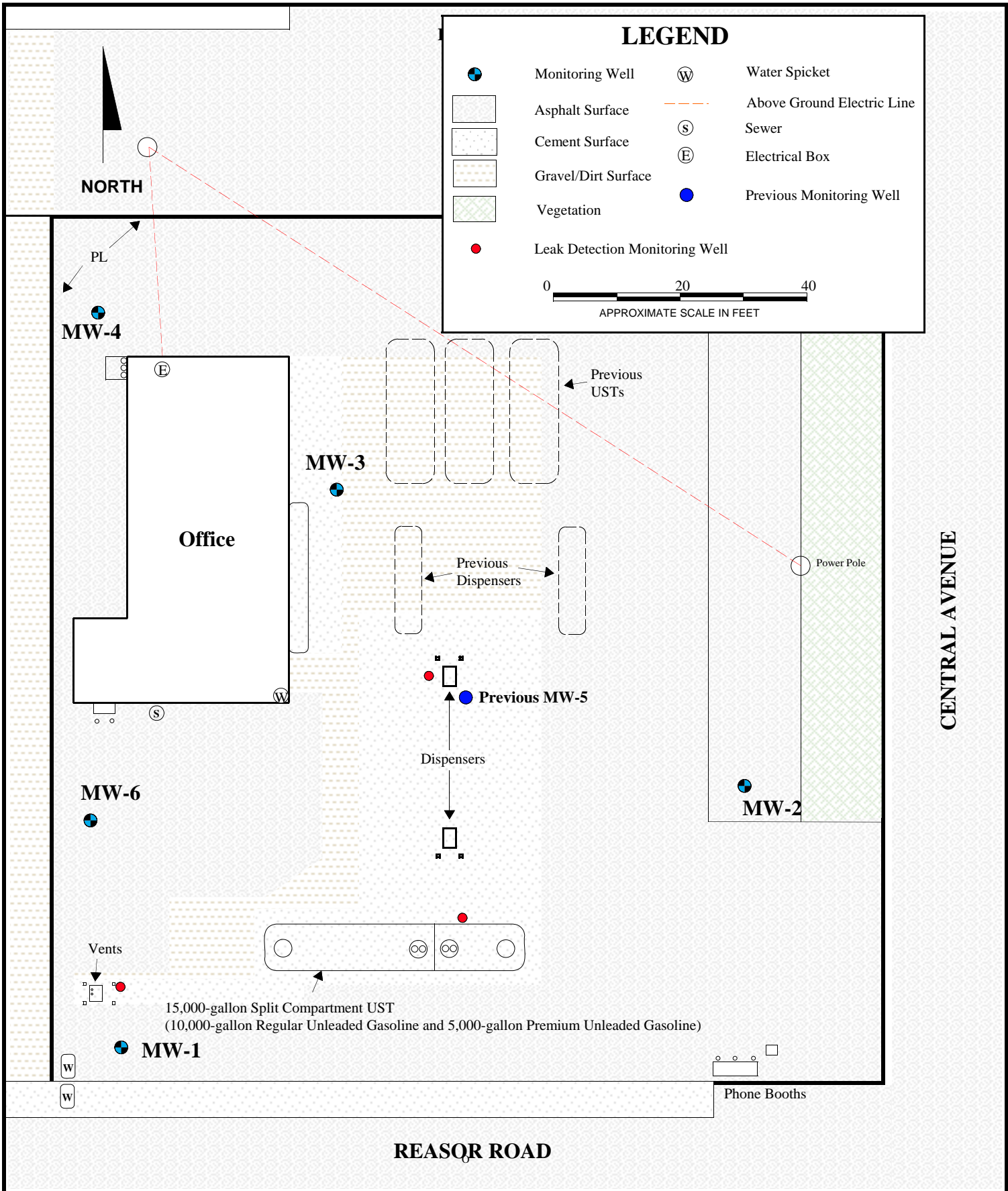
ND: Not detected at or below the method detection limit as shown.

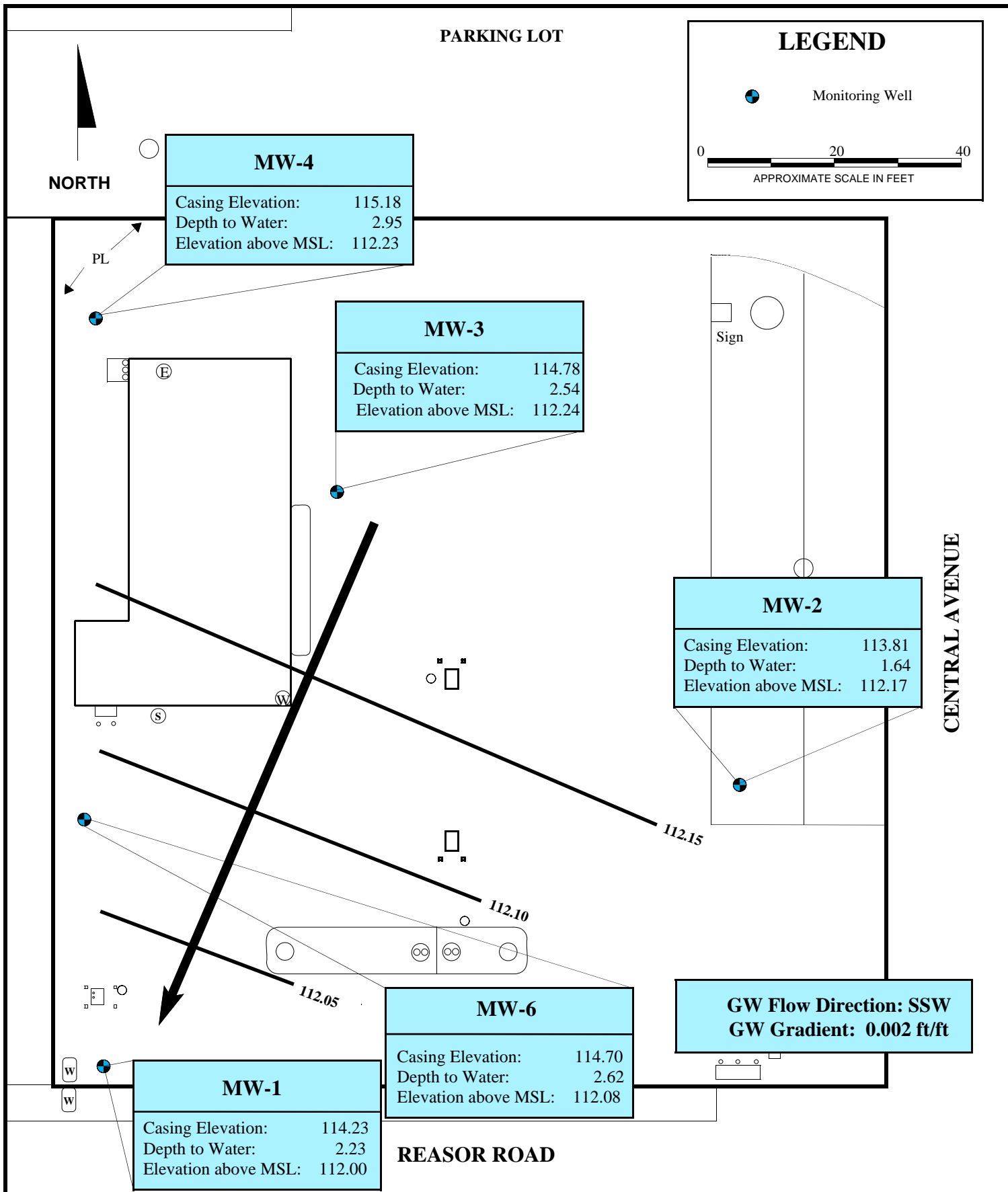
**Chart 1**  
**Hydrograph**  
McKinleyville 76  
2698 Central Avenue  
McKinleyville, California 95519



# Figures







**GROUNDWATER LEVEL CONTOUR MAP**  
**APRIL 2005**

Figure

McKinleyville 76  
2698 Central Avenue  
McKinleyville, California 95519

Project No.

SP-160

Report Date

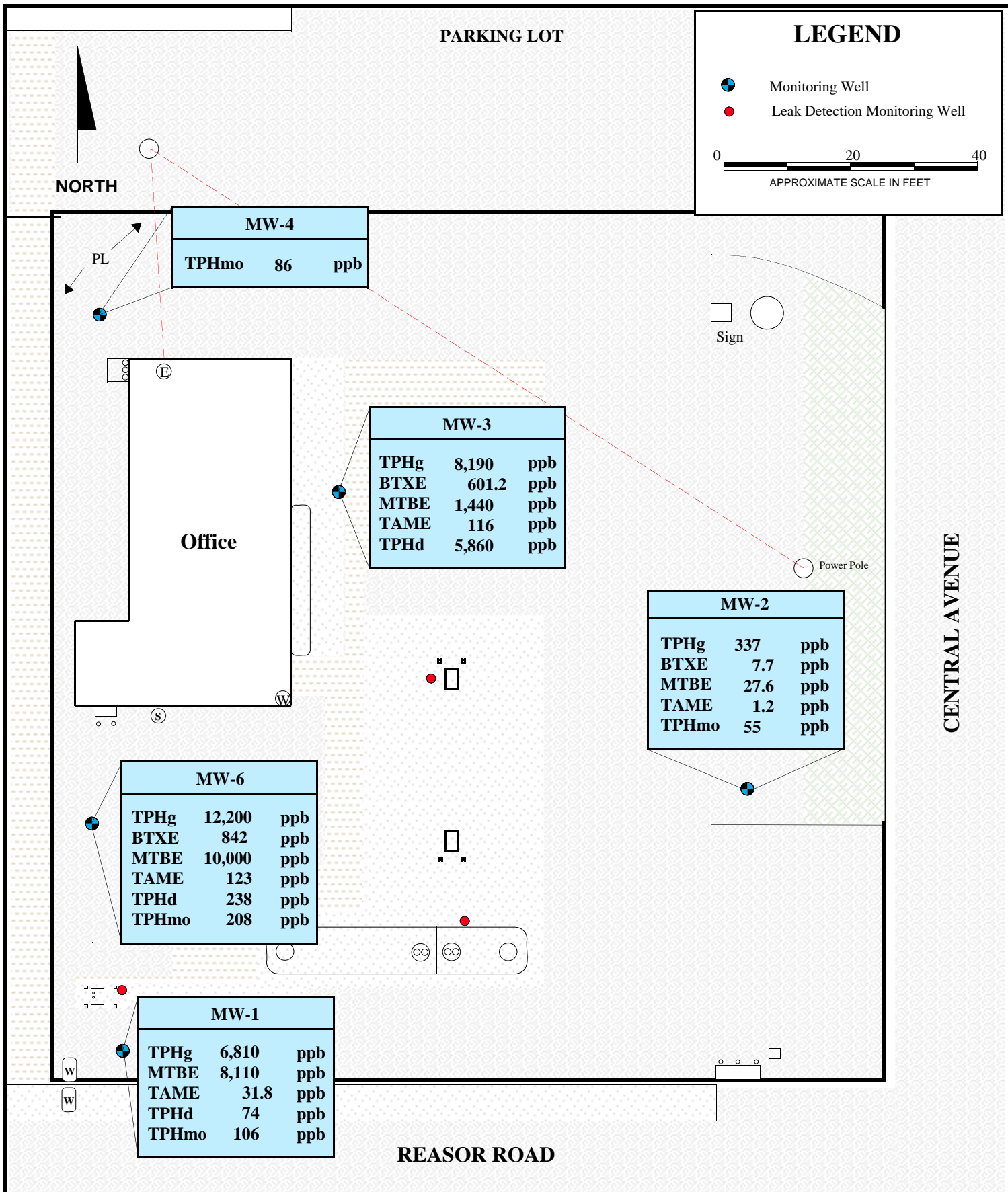
6/28/05

3

Environmental

Services





## GROUNDWATER ANALYTICAL RESULTS

Figure

McKinleyville 76  
2698 Central Avenue  
McKinleyville, California 95519

Project No.

SP-160

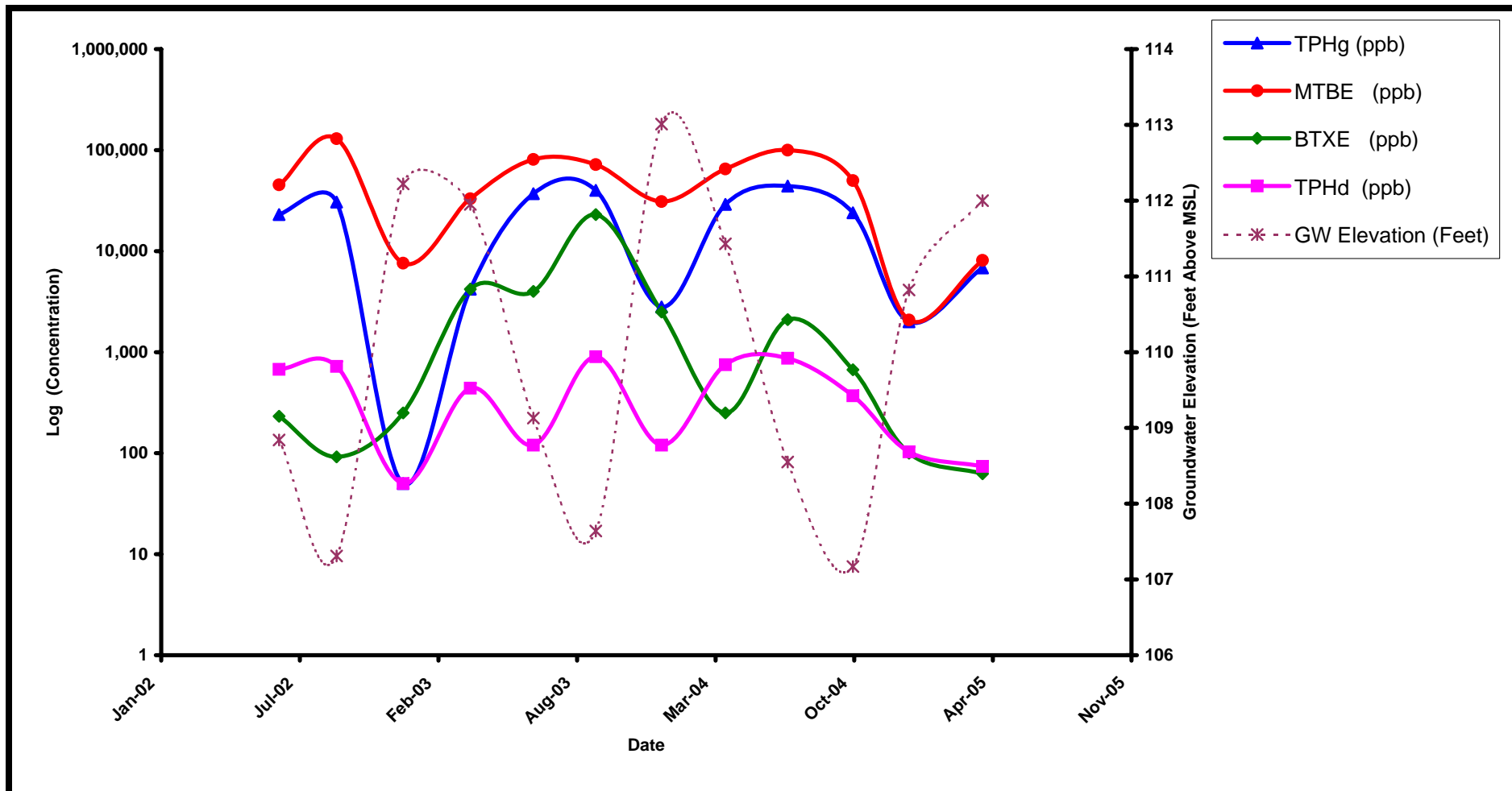
Report Date

6/28/05

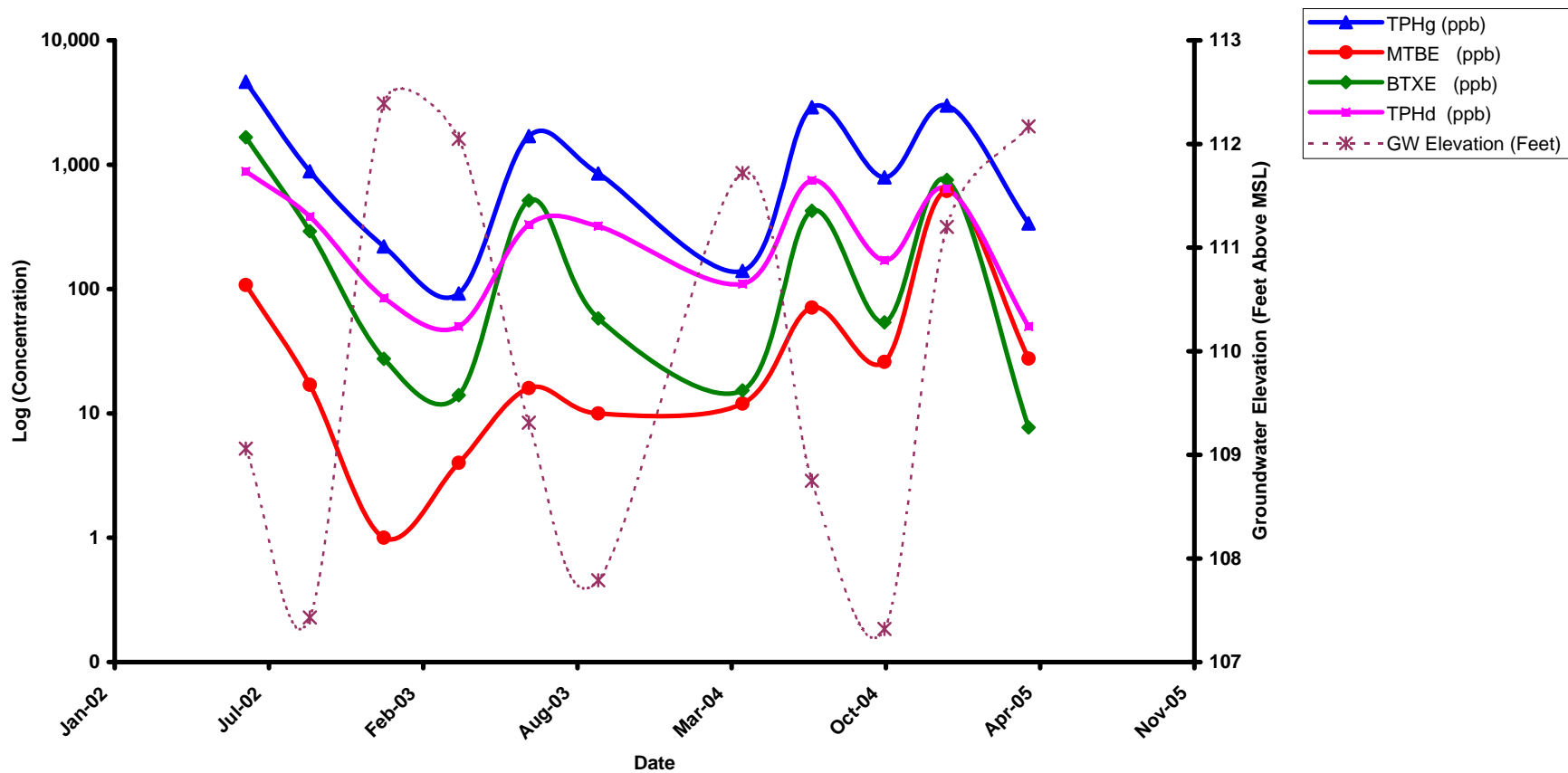
4

Environmental

Services







**SounPacific**  
 Environmental Services  
 (707) 269-0884

### MW-2 HYDROCARBON CONCENTRATIONS VS. TIME

McKinleyville 76  
 2698 Central Avenue  
 McKinleyville, California 95519

Project No.

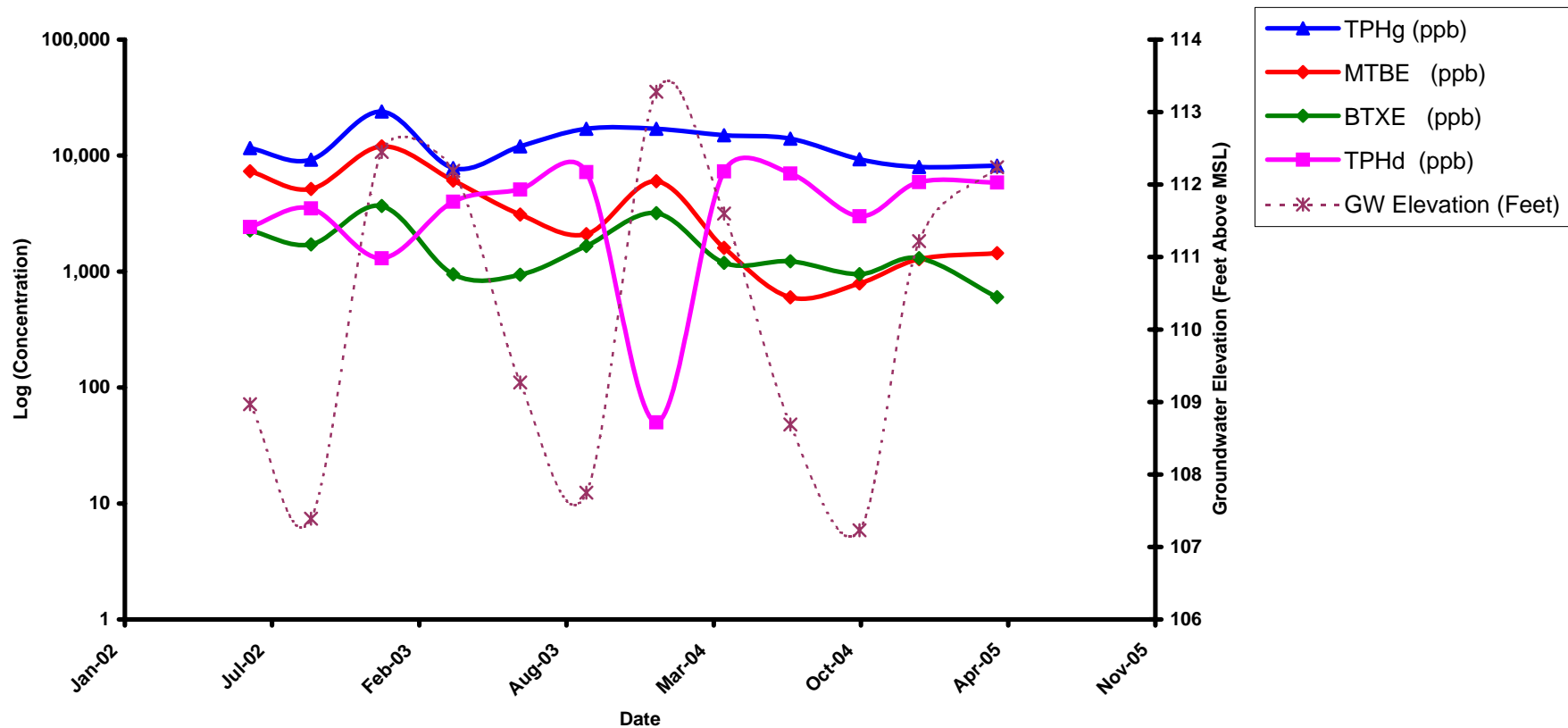
SP-160

Date

6/28/2005

Figure

6



### MW-3 HYDROCARBON CONCENTRATIONS VS. TIME

McKinleyville 76  
2698 Central Avenue  
McKinleyville, California 95519

Project No.

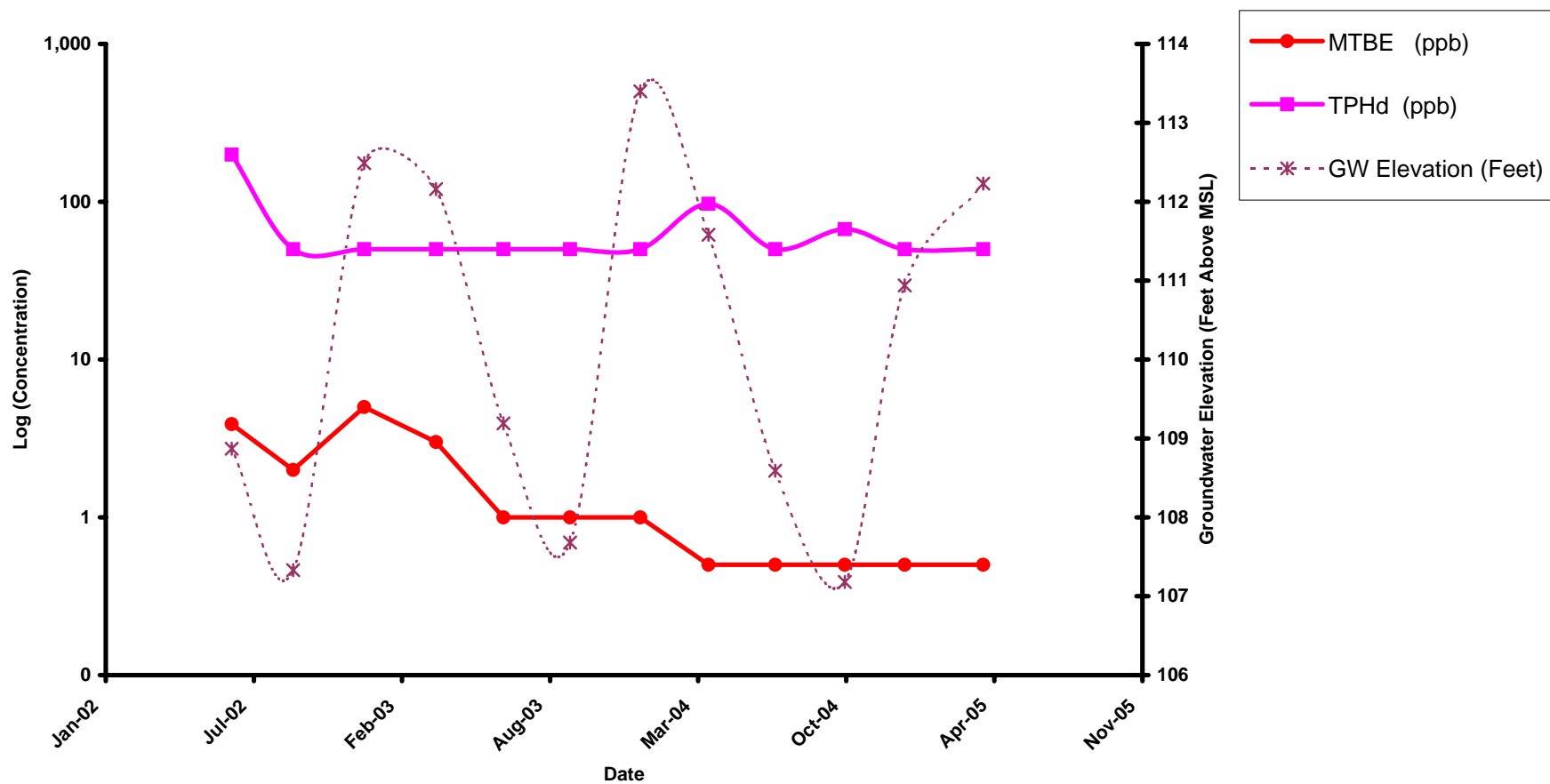
SP-160

Date

6/28/2005

Figure

7



**MW-4 HYDROCARBON  
CONCENTRATIONS VS. TIME**

McKinleyville 76  
2698 Central Avenue  
McKinleyville, California 95519

Project No.

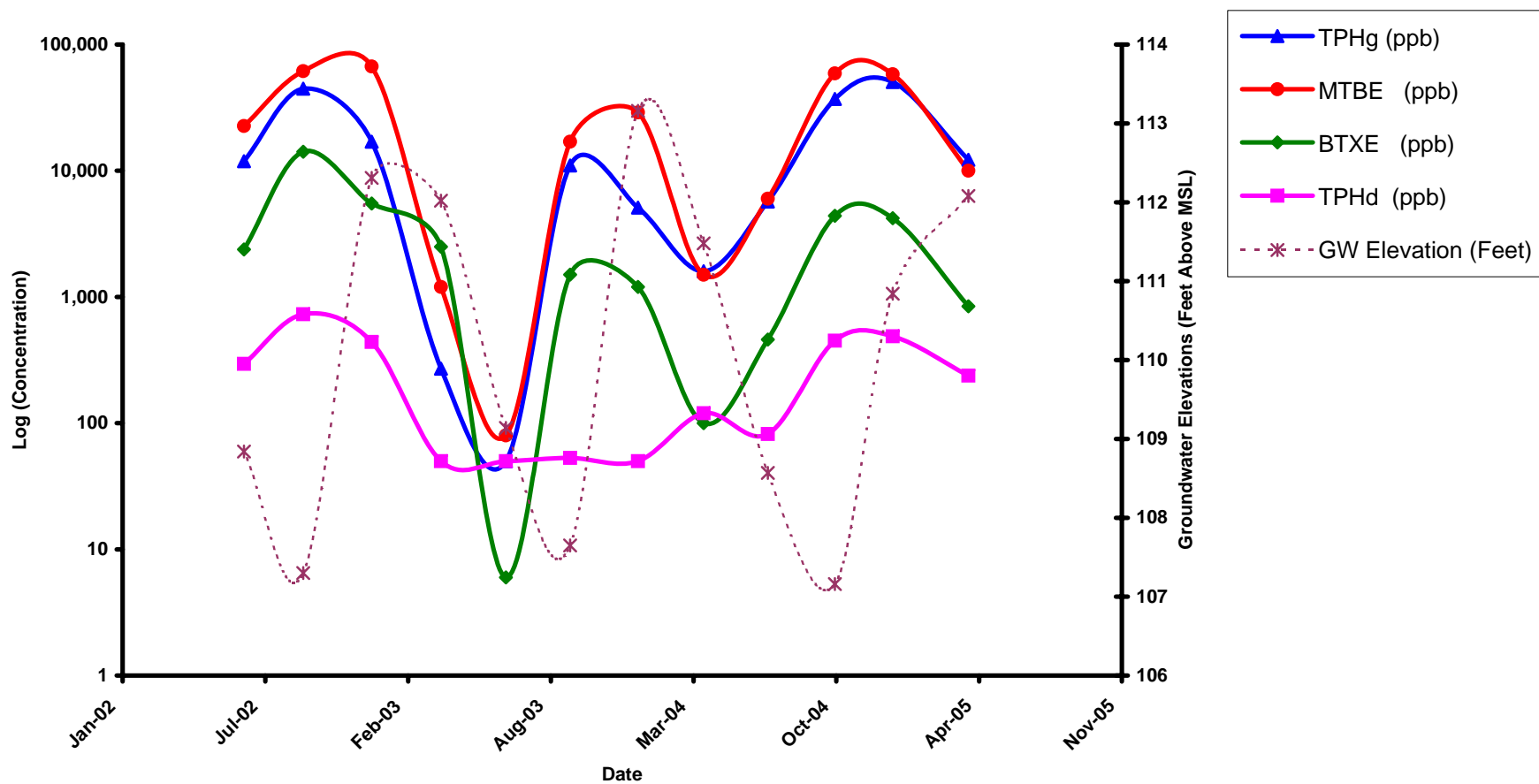
SP-160

Date

6/28/2005

Figure

8



**SounPacific**  
 Environmental Services  
 (707) 269-0884

### MW-6 HYDROCARBON CONCENTRATIONS VS. TIME

McKinleyville 76  
 2698 Central Avenue  
 McKinleyville, California 95519

Project No.

SP-160

Date

6/28/2005

Figure

9

# Appendices

# **Appendix A**

April 29, 2005

**Lab ID: 5040276**

Andy Malone  
SOUNPACIFIC  
4612 GREENWOOD HEIGHTS DR  
KNEELAND, CA 95549  
RE: MCK76 2698 CENTRAL AVE SP-160

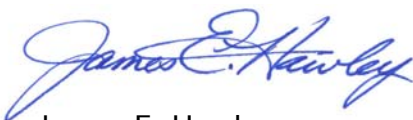
Dear Andy Malone,

Enclosed are the analysis results for Work Order number 5040276. All analysis were performed under strict adherence to our established Quality Assurance Plan. Any abnormalities are listed in the qualifier section of this report.

If you have any questions regarding these results, please feel free to contact us at any time. We appreciate the opportunity to service your environmental testing needs.

Sincerely,

For



James E. Hawley  
Laboratory Director  
California ELAP Certification Number 1677

Report To: SOUNPACIFIC  
4612 GREENWOOD HEIGHTS DR  
KNEELAND, CA 95549

Attention: Andy Malone

Project: MCK76 2698 CENTRAL AVE SP-160

Description: MW-1

Matrix: Water

Lab ID: 5040276-01

Lab No: 5040276  
Reported: 04/29/05  
Phone: 707-269-0884  
P.O. #

Sampled: 04/05/05 00:00

Received: 04/08/05 12:18

## Volatile Organic Compounds

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
Gasoline	ug/l	6810			1250	EPA 8015/8260	04/13/05	04/13/05	B5D0359
Benzene	"	ND			12.5	"	"	"	"
Ethylbenzene	"	ND			12.5	"	"	"	"
Toluene	"	ND			12.5	"	"	"	"
Xylenes (total)	"	ND			25.0	"	"	"	"
Methyl tert-butyl ether	"	8110			250	"	04/14/05	"	"
Di-isopropyl ether	"	ND			12.5	"	04/13/05	"	"
Tert-amyl methyl ether	"	31.8			12.5	"	"	"	"
Ethyl tert-butyl ether	"	ND			12.5	"	"	"	"
Tert-butyl alcohol	"	ND			1250	"	"	"	"
Surrogate: 4-Bromofluorobenzene		109 %			43-155	"	"	"	"

## TPH Diesel & Motor Oil

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
Diesel	ug/l	74			50	EPA 8015 MOD	04/14/05	04/11/05	B5D0227
Motor Oil	"	106			50	"	"	"	"
Surrogate: Octacosane		75.2 %			50-150	"	"	"	"

Approved By

Basic Laboratory, Inc.

California D.O.H.S. Cert #1677



Report To: SOUNPACIFIC  
4612 GREENWOOD HEIGHTS DR  
KNEELAND, CA 95549

Attention: Andy Malone

Project: MCK76 2698 CENTRAL AVE SP-160

Description: MW-2

Matrix: Water

Lab ID: 5040276-02

Lab No: 5040276  
Reported: 04/29/05  
Phone: 707-269-0884  
P.O. #

Sampled: 04/05/05 00:00

Received: 04/08/05 12:18

## Volatile Organic Compounds

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
Gasoline	ug/l	337			50.0	EPA 8015/8260	04/14/05	04/14/05	B5D0359
Benzene	"	7.7			0.5	"	"	"	"
Ethylbenzene	"	ND			0.5	"	"	"	"
Toluene	"	ND			0.5	"	"	"	"
Xylenes (total)	"	ND			1.0	"	"	"	"
Methyl tert-butyl ether	"	27.6			1.0	"	"	"	"
Di-isopropyl ether	"	ND			0.5	"	"	"	"
Tert-amyl methyl ether	"	1.2			0.5	"	"	"	"
Ethyl tert-butyl ether	"	ND			0.5	"	"	"	"
Tert-butyl alcohol	"	ND			50.0	"	"	"	"
Surrogate: 4-Bromofluorobenzene		112 %			43-155	"	"	"	"

## TPH Diesel & Motor Oil

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
Diesel	ug/l	ND			50	EPA 8015 MOD	04/14/05	04/11/05	B5D0227
Motor Oil	"	55	D-02		50	"	"	"	"
Surrogate: Octacosane		94.7 %			50-150	"	"	"	"

Approved By

Basic Laboratory, Inc.

California D.O.H.S. Cert #1677

Report To: SOUNPACIFIC  
4612 GREENWOOD HEIGHTS DR  
KNEELAND, CA 95549

Attention: Andy Malone

Project: MCK76 2698 CENTRAL AVE SP-160

Description: MW-3

Matrix: Water

Lab ID: 5040276-03

Lab No: 5040276  
Reported: 04/29/05  
Phone: 707-269-0884  
P.O. #

Sampled: 04/05/05 00:00

Received: 04/08/05 12:18

## Volatile Organic Compounds

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
Gasoline	ug/l	8190			1000	EPA 8015/8260	04/13/05	04/13/05	B5D0359
Benzene	"	347			10.0	"	"	"	"
Ethylbenzene	"	201			10.0	"	"	"	"
Toluene	"	31.8			10.0	"	"	"	"
Xylenes (total)	"	21.4			20.0	"	"	"	"
Methyl tert-butyl ether	"	1440			20.0	"	"	"	"
Di-isopropyl ether	"	ND			10.0	"	"	"	"
Tert-amyl methyl ether	"	116			10.0	"	"	"	"
Ethyl tert-butyl ether	"	ND			10.0	"	"	"	"
Tert-butyl alcohol	"	ND			1000	"	"	"	"
Surrogate: 4-Bromofluorobenzene		108 %			43-155	"	"	"	"

## TPH Diesel & Motor Oil

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
Diesel	ug/l	5860	D-08		150	EPA 8015 MOD	04/18/05	04/11/05	B5D0227
Motor Oil	"	ND			150	"	"	"	"
Surrogate: Octacosane		69.9 %			50-150	"	"	"	"

Approved By

Basic Laboratory, Inc.

California D.O.H.S. Cert #1677

Report To: SOUNPACIFIC  
4612 GREENWOOD HEIGHTS DR  
KNEELAND, CA 95549

Attention: Andy Malone

Project: MCK76 2698 CENTRAL AVE SP-160

Description: MW-4

Matrix: Water

Lab ID: 5040276-04

Lab No: 5040276  
Reported: 04/29/05  
Phone: 707-269-0884  
P.O. #

Sampled: 04/05/05 00:00

Received: 04/08/05 12:18

## Volatile Organic Compounds

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
Gasoline	ug/l	ND			50.0	EPA 8015/8260	04/13/05	04/13/05	B5D0359
Benzene	"	ND			0.5	"	"	"	"
Ethylbenzene	"	ND			0.5	"	"	"	"
Toluene	"	ND			0.5	"	"	"	"
Xylenes (total)	"	ND			1.0	"	"	"	"
Methyl tert-butyl ether	"	ND			1.0	"	"	"	"
Di-isopropyl ether	"	ND			0.5	"	"	"	"
Tert-amyl methyl ether	"	ND			0.5	"	"	"	"
Ethyl tert-butyl ether	"	ND			0.5	"	"	"	"
Tert-butyl alcohol	"	ND			50.0	"	"	"	"
Surrogate: 4-Bromofluorobenzene		106 %			43-155	"	"	"	"

## TPH Diesel & Motor Oil

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
Diesel	ug/l	ND			50	EPA 8015 MOD	04/14/05	04/11/05	B5D0227
Motor Oil	"	86	D-02		50	"	"	"	"
Surrogate: Octacosane		91.7 %			50-150	"	"	"	"

Approved By

Basic Laboratory, Inc.

California D.O.H.S. Cert #1677

Report To: SOUNPACIFIC  
4612 GREENWOOD HEIGHTS DR  
KNEELAND, CA 95549

Attention: Andy Malone

Project: MCK76 2698 CENTRAL AVE SP-160

Description: MW-6

Matrix: Water

Lab ID: 5040276-05

Lab No: 5040276  
Reported: 04/29/05  
Phone: 707-269-0884  
P.O. #

Sampled: 04/05/05 00:00

Received: 04/08/05 12:18

## Volatile Organic Compounds

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
Gasoline	ug/l	12200			4000	EPA 8015/8260	04/14/05	04/13/05	B5D0359
Benzene	"	842			40.0	"	"	"	"
Ethylbenzene	"	ND			40.0	"	"	"	"
Toluene	"	ND			40.0	"	"	"	"
Xylenes (total)	"	ND			80.0	"	"	"	"
Methyl tert-butyl ether	"	10000			800	"	04/13/05	"	"
Di-isopropyl ether	"	ND			40.0	"	04/14/05	"	"
Tert-amyl methyl ether	"	123			40.0	"	"	"	"
Ethyl tert-butyl ether	"	ND			40.0	"	"	"	"
Tert-butyl alcohol	"	ND			4000	"	"	"	"
Surrogate: 4-Bromofluorobenzene		106 %			43-155	"	"	"	"

## TPH Diesel & Motor Oil

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
Diesel	ug/l	238	I-02, QM-4X, QR-03		50	EPA 8015 MOD	04/21/05	04/20/05	B5D0465
Motor Oil	"	208	I-02, QM-4X, QR-03		50	"	"	"	"
Surrogate: Octacosane		92.0 %	I-02		50-150	"	"	"	"

Approved By

Basic Laboratory, Inc.

California D.O.H.S. Cert #1677

**Report To:** SOUNPACIFIC  
4612 GREENWOOD HEIGHTS DR  
KNEELAND, CA 95549  
**Attention:** Andy Malone  
**Project:** MCK76 2698 CENTRAL AVE SP-160

**Lab No:** 5040276  
**Reported:** 04/29/05  
**Phone:** 707-269-0884  
**P.O. #**

### Notes and Definitions

D-02 Hydrocarbon pattern present in the requested fuel quantitation range but does not resemble the pattern of the requested fuel.

D-08 Results in the diesel organics range are primarily due to overlap from a gasoline range product.

I-02 Sample was analyzed outside of the EPA recommended holding time.

J Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.

QM-4X The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to the analyte concentration being greater than 4 times the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.

QR-03 The RPD value for the sample duplicate or MS/MSD was outside of the QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.

DET Analyte DETECTED

ND Analyte NOT DETECTED at or above the detection limit

NR Not Reported

dry Sample results reported on a dry weight basis

RPD Relative Percent Difference

< Less than reporting limit

≤ Less than or equal to reporting limit

> Greater than reporting limit

≥ Greater than or equal to reporting limit

MDL Method Detection Limit

RL/ML Minimum Level of Quantitation

MCL/AL Maximum Contaminant Level/Action Level

mg/kg Results reported as wet weight

TTLCL Total Threshold Limit Concentration

STLC Soluble Threshold Limit Concentration

TCLP Toxicity Characteristic Leachate Procedure

---

Approved By

Basic Laboratory, Inc.

California D.O.H.S. Cert #1677

## BASIC LABORATORY CHAIN OF CUSTODY RECORD

2218 Railroad Ave., Redding, CA 96001 (530) 243-7234 FAX (530) 243-7494

LAB #:

5040276

CLIENT NAME:

SounPacific

PROJECT NAME:

MCK 76

PROJECT #:

SP-160

SAMPLE TYPE:

W

ADDRESS:

SounPacific Environmental Services  
4612 Greenwood Heights Drive  
Kneeland, CA 95549

REQUESTED COMP. DATE:

4-22-05

STATE FORMS?

☐

# OF SAMPLES:

5

TURN AROUND TIME: STD ☒ RUSH ☐

RUSH

PAGE 1 OF 1

PROJECT MANAGER:

Andy Malone

PHONE:

(707) 269-0884

FAX:

(707) 269-0699

E-MAIL: andy@

sounpacific.com

INVOICE TO:

SounPacific

PO#:

SPECIAL MAIL ☐E-MAIL ☒FAX ☐EDT ☐☒

## ANALYSIS REQUESTED

# OF BOTTLES

TPHg by 8260

BTEX by 8260

5 oxygenates by 8260

MTBE by 8260

TPHd, Mo

Lead Scavengers

Total Lead

Semi Volatiles

REP:

ID#:

SYSTEM#:

GLOBAL ID #:

70602300261

QC=1 2 3 4

LAB ID

REMARKS

DATE TIME WATER COMP SOIL SAMPLE DESCRIPTION

4/5/05  
↓  
↓  
↓  
↓  
↓

"11th Quarterly"

MW-1  
MW-2  
MW-3  
MW-4  
MW-6

# OF BOTTLES

TPHg by 8260

BTEX by 8260

5 oxygenates by 8260

MTBE by 8260

TPHd, Mo

Lead Scavengers

Total Lead

Semi Volatiles

LAB ID

REMARKS

PRESERVED WITH: HNO<sub>3</sub> ☐ H<sub>2</sub>SO<sub>4</sub> ☐ NaOH ☐ ZnAcAc/NaOH ☐☒ HCL☐ Thio☐ HER ice

SAMPLED BY:

Jeff Coates

DATE/TIME:

4/5/05

RELINQUISHED BY:

Jeff Coates

DATE/TIME:

4/5/05

RECEIVED BY:

DATE/TIME:

RELINQUISHED BY:

DATE/TIME:

RECEIVED BY: (SAMPLES UNVERIFIED)

DATE/TIME:

RELINQUISHED BY:

DATE/TIME:

RECEIVED BY LAB: (VERIFIED)

DATE/TIME:

SAMPLES SHIPPED VIA: UPS

FEDEX

POST

BUS

OTHER

INSTRUCTIONS, TERMS AND CONDITIONS ON BACK

Always email to: greg@sounpacific.com, sounpacific@starband.net

Additional email recipients are circled below:

marty@sounpacific.com, jeff@sounpacific.com, andy@sounpacific.com

## **Appendix B**



# **Standard Operating Procedures**

## **Groundwater Level Measurements and Free Phase Hydrocarbon Measurements**

All SounPacific staff and contractors shall adopt the following procedures any time that groundwater elevations are determined for the purposes of establishing groundwater gradient and direction, and prior to any sampling event.

Wells are to be tested for free phase hydrocarbons (free product) before the first development or sampling of any new well, and in any well that has historically contained free product.

### **Equipment Checklist**

- ☐ Combination water level / free phase hydrocarbon indicator probe (probe)
- ☐ Gauging Data / Purge Calculations Sheet
- ☐ Pencil or Pen/sharpie
- ☐ Disposable Gloves
- ☐ Distilled Water and or know water source on site that is clean
- ☐ Alconox (powder) or Liquinox (liquid) non-phosphate cleaners—do not use soap!
- ☐ Buckets or Tubs for decontamination station
- ☐ Tools necessary to access wells
- ☐ Site Safety Plan
- ☐ This Standard Operating Procedure
- ☐ Notify Job site business that you will be arriving to conduct work.

### **Procedure**

1. Review Site Safety Plan and utilize personal protection appropriate for the contaminants that may be encountered.
2. Access and open all monitoring wells to be measured. Allow wells to equilibrate for approximately 15 minutes before taking any measurements.



3. Decontaminate probe with Alconox or Liquinox solution, and rinse with distilled water.
4. Determine the diameter of the well to be measured and indicate this on the Gauging Data / Purge Calculations Sheet.
5. Words of caution: Please be careful with water level and product meters probes are not attached with high strength material so please make sure to avoid catching the end on anything in the well and make sure not to wind reel to the point that it could pull on the probe. *If product is suspect in a well, go to step 6, if **no** product is suspected go to step 7 below.*
6. **When product is present or suspected:** use the product level meter. Clip the static charge clamp to the side of the well casing. Then lower probe into the well through the product/water interface about one foot if possible. Then slowly raise the probe back up through the product/water interface layer and record the level as the tone changes from solid to broken-record this level in the Gauging Data / Purge Calculations Sheet to the nearest 0.01 foot (DTP). Continue to raise the probe up through the product until the tone stops completely-record this level on the Gauging Data / Purge Calculations Sheet to the nearest 0.01 foot (DTW). Then go to step 8.
7. **When no product is present or suspected:** If no free product is present, record the depth of the water (to the nearest 0.01 foot) relative to the painted black mark on the top of the well casing. Leave the probe in the well just a hair above the water level to ensure the well as equilibrated. As the well rises, the tone will sound. Make sure no increase in water levels have occurred in over a ten-minute period. Water levels can lower as well as rise. Make sure you note when the level you keep lowering the probe to has remained stable for at least ten minutes. Once this has been accomplished, please record this level in the Gauging Data / Purge Calculations Sheet to the nearest 0.01 foot (DTW).
8. Turn off the probe, and use the probe to determine the depth to the bottom of the well relative to the top of the well casing. This is the depth to bottom measurement (DTB).
9. Decontaminate probe and tape by washing in an Alconox/Liquinox solution (***read directions on solution for ratio of water to cleanser***) and use the toothbrush provided to remove any foreign substance from the probe and tape. Then triple rinse probe and tape with clean water and then proceed to take measurements in the next well.
10. If sampling is to occur, proceed to implement SounPacific's Standard Operating Procedure for Monitoring Well Purging and Sampling. If no sampling is to be performed, close and secure all wells and caps.



# Standard Operating Procedures

## Monitoring Well Purging and Groundwater Sampling

All SounPacific employees and contractors shall adopt the following procedures any time that groundwater samples are to be taken from an existing groundwater monitoring well.

Prior to the implementation of these procedures, the groundwater level **MUST** be measured and the presence of free phase hydrocarbons determined in accordance with SounPacific's Standard Operating Procedures for Groundwater Level Measurements and Free Phase Hydrocarbon Measurements.

### Equipment Checklist

- ☐ **Gauging Data / Purge Calculations Sheet used for water level determination**
- ☐ Chain of Custody Form
- ☐ pH/ Conductivity / Temperature meter
- ☐ Pencil or Pen
- ☐ Indelible Marker
- ☐ Calculator
- ☐ Disposable Gloves
- ☐ Distilled Water
- ☐ Alconox/liquinox liquid or powdered non-phosphate cleaner
- ☐ Buckets or Tubs for decontamination station
- ☐ Bottom-filling bailer or pumping device for purging
- ☐ Disposable bottom-filling bailer and emptying device for sampling
- ☐ String, twine or fishing line for bailers
- ☐ Sample containers appropriate for intended analytical method (check with lab)
- ☐ Sample labels
- ☐ Site Safety Plan
- ☐ Tools necessary to access wells
- ☐ Drum space on site adequate for sampling event

## **SounPacific Standard Operating Procedures for Groundwater Level Measurements and Free Phase Hydrocarbon Measurements, Page 2 of 3**

### **Procedure**

1. Review Site Safety Plan and utilize personal protection appropriate for the contaminants that may be encountered.
2. Measure groundwater levels and check for the presence of free product in accordance with the Standard Operating Procedures for Groundwater Level Measurements and Free Phase Hydrocarbon Measurements.

### **Purging**

3. Calculate and record the volume of standing water in each well using the information provided on the Gauging Data / Purge Calculations sheet.  
 $(DTB-DTW) \times \text{Conversion Factor} = \text{Casing Volume}.$
4. The purge volume shall be at least three times and no more than seven times the volume of standing water (the casing volume).
5. Purge the well by bailing or pumping water from the well into a calibrated receptacle, such as a five gallon bucket or tub with markings to indicate one gallon increments. Collect purgeate in a 55 gallon labeled drum and store on site. Drum labels should include the date, contents, site number, and SounPacific's name and telephone number.
6. Take measurements of pH, conductivity, temperature, and visual observations to verify the stabilization of these parameters. At least five measurements of these parameters should be made throughout the purging process. The parameters shall be considered stabilized if successive measurements vary by less than 0.25 pH units, 10% of conductivity in  $\mu\text{S}$ , and  $1^{\circ}\text{C}$  (or  $1.8^{\circ}\text{F}$ ). Continue purging until at least three times the casing volume has been removed, and the measured parameters have stabilized as indicated above. Do not exceed seven casing volumes.
7. Take a final depth to groundwater measurement and calculate the casing volume of the recharged well. Ideally, the casing volume should have recharged to at least 80% of the original measured casing volume before sampling commences. If due to slow recharge rates it is not feasible to wait for the well to fully recharge, then note this on the Gauging Data / Purge Calculation Sheet and proceed to sample following the procedure below.

## **Sampling**

8. **After completing groundwater measurement, and checking for free product if necessary, in accordance with SounPacific's Standard Operating Procedures for Groundwater Level Measurements and Free Phase Hydrocarbon Measurements, and after purging monitoring wells as described above, groundwater samples may be collected.**
9. Slowly lower a clean, previously unused disposable bailer into the well water approximately half of the bailer length, and allow the bailer to slowly fill.
10. Withdraw the full bailer from the monitoring well and utilize the included (clean and unused) bottom-emptying device to fill the necessary sample containers, and seal the container with the included PTFE (Teflon) lined cap.
11. When filling VOAs, fill the VOA completely full, with the meniscus rising above the rim of the bottle. Carefully cap the VOA and invert it and gently tap it to determine whether air bubbles are trapped inside. If the VOA contains air bubbles, refill the VOA and repeat this step.
12. All samples shall be labeled with the Sample ID, the Sample Date, and the Sample Location or Project Number. Use an indelible marker for writing on sample labels.
13. Record all pertinent sample data on the Chain of Custody.
14. Place samples in an ice chest cooled to 4°C with ice or "blue ice". Bottles should be wrapped in bubble wrap, and VOA's should be inserted in a foam VOA holder to protect against breakage. Samples are to be kept at 4°C until delivered to the laboratory. Any transference of sample custody shall be indicated on the Chain of Custody with the appropriate signatures as necessary.
15. Utilize clean, previously unused gloves, bailer and line, and bottom-emptying device for each well sampled.
16. When finished with all sampling, close and secure all monitoring wells.
17. Leave the site cleaner than when you arrived and drive safely.

# Appendix C

## GAUGING DATA/PURGE CALCULATIONS

Job Site: Mck. 76Job No.: SP-160Event: "11<sup>th</sup> Quarterly"Date: 4/5/05

**Soun Pacific**  
 Environmental Services  
 (707) 269-0884

WELL NO.	DIA. (in.)	DTB (ft.)	DTW (ft.)	ST (ft.)	CV (gal.)	PV (gal.)	SPL (ft.)	Bailer Loads	Notes
MW-1	2	12.55	2.23	10.32	1.65	4.95	-		No odor
MW-2	2	12.97	1.64	11.33	1.81	5.43	-		Odor
MW-3	2	11.21	2.54	8.67	1.38	4.14	-		Odor
MW-4	2	12.20	2.95	9.25	1.48	4.44	-		No odor
MW-6	2	12.19	2.62	9.57	1.53	4.59	-		No odor
							-		
							-		
							-		

## Explanation:

DIA. = Well Diameter  
 DTB = Depth to Bottom  
 DTW = Depth to Water  
 ST = Saturated Thickness (DTB-DTW)  
 CV = Casing Volume (ST x cf)  
 PV = Purge Volume (standard 3 x CV,  
 well development 10 x CV)  
 SPL = Thickness of Separate Phase Liquid

## Conversion Factors (cf):

2 in. dia. well cf = 0.16 gal./ft.  
 4 in. dia. well cf = 0.65 gal./ft.  
 6 in. dia. well cf = 1.44 gal./ft.

Sampler:

Jeff Craines

## Well Gauging/Sampling Report

Sheet 1 of 5

Date: 4/5/05 Project Name: MCK. 76 Project No: SP-160 Well Number: MW-1

Analyses Tested: BTEX, S-oxys, TPH<sub>g</sub>, TPH<sub>d/mo</sub>

Sample Containers: (3) Helvons, (2) 1-L Amber Bottles

Purge Technique: ☒ Bailor ☐ Pump  
Sonder Used: ☐ Water Meter ☒ Interface Meter

### Water & Free Product Levels

Time	Depth to Water	Depth to Product	Notes:
<u>10:39</u>	<u>2.23</u>		<u>Sheen detected</u>
<u>11:55</u>	<u>2.23</u>		<u>↓</u>
	<u>End</u>		

### Field Measurements

Time	Total Vol. Removed/(gal)	pH	Temp/(F)	Cond./(ms/cm)	DO/(mg/L)	DO/(%)	
<u>12:33</u>	<u>0</u>	<u>7.07</u>	<u>59.16</u>	<u>.405</u>	<u>.91</u>	<u>9.0</u>	
<u>12:38</u>	<u>1.65</u>	<u>6.97</u>	<u>58.80</u>	<u>.371</u>	<u>.54</u>	<u>5.4</u>	
<u>12:42</u>	<u>3.30</u>	<u>6.92</u>	<u>58.84</u>	<u>.378</u>	<u>.49</u>	<u>4.8</u>	
<u>12:49</u>	<u>4.95</u>	<u>6.84</u>	<u>58.92</u>	<u>.328</u>	<u>.38</u>	<u>3.7</u>	

Field Scientist: JH Gaines





# Well Gauging/Sampling Report

Sheet 2 of 5

Date: 4/5/05 Project Name: MCK. 76 Project No: SP-160 Well Number: MW-2

Analyses Tested: BTEX, S-Oxy's, TPHg, TPLd/mo

Sample Containers: (3) HCl Vials, (2) 1-L Amber bottles

Purge Technique: ☒ Bailer ☐ Pump

Sounder Used: ☐ Water Meter ☒ Interface Meter

## Water & Free Product Levels

Time	Depth to Water	Depth to Product	Notes:
11:45	1.64		No sheen
11:58	1.64		↓
	End		

## Field Measurements

Time	Total Vol. Removed (gal)	pH	Temp (F)	Cond. (ns/cm)	DO (mg/L)	DO (%)	
1:01	0	6.89	58.79	.162	.46	4.6	
1:05	1.81	6.85	58.34	.142	.34	3.4	
1:09	3.62	6.83	58.37	.133	.33	3.3	
1:14	5.43	6.81	58.37	.138	.31	3.1	

Field Scientist: Jeff Gaines



## Well Gauging/Sampling Report

Sheet 3 of 5

Date: 4/5/05 Project Name: Mck 76 Project No: SP-160 Well Number: MW-3

Analyses Tested: BTEX, S-Oxys, TPHg, TPH d/mo

Sample Containers: (3) HCl VOAS, (2) 1-L Amber bottles

Purge Technique: ☒ Bailer ☐ Pump

Sounder Used: ☐ Water Meter ☒ Interface Meter

### Water & Free Product Levels

Time	Depth to Water	Depth to Product	Notes:
11:49	2.54		No sheen
12:01	2.54		
	End		

### Field Measurements

Time	Total Vol. Removed (gal)	pH	Temp (F)	Cond. (ms/cm)	DO (mg/L)	DO (%)	
1:29	0	6.58	57.44	.522	.30	2.9	
1:33	1.38	6.65	57.68	.528	.32	3.2	
1:37	2.76	6.67	57.75	.530	.30	3.0	
1:41	4.14	6.67	57.75	.530	.30	3.0	

Field Scientist: Jeff Gaines

## Well Gauging/Sampling Report

Sheet 4 of 5

Date: 4/5/05 Project Name: MCK 76 Project No: SP-160 Well Number: MW-4

Analyses Tested: BTEX, S-Oxys, TPH g, TPH d/mo

Sample Containers: (3) HCl VOA's, (2) 1-L Amber bottles

Purge Technique: ☒ Bailer ☐ Pump

Sounder Used: ☐ Water Meter ☒ Interface Meter

### Water & Free Product Levels

Time	Depth to Water	Depth to Product	Notes
11:51	2.95		No sheen
12:05	2.95		↓
	End		

### Field Measurements

Time	Total Vol. Removed/(gal)	pH	Temp/(F)	Cond./(ms/cm)	DO/(mg/L)	DO/(%)	
2:00	0	6.78	55.86	.156	.80	7.7	
2:04	1.48	6.73	56.18	.157	.79	7.6	
2:07	2.96	6.60	56.24	.158	.72	6.9	
2:13	4.44	6.52	56.26	.161	.68	6.5	

Field Scientist: Jeff Gaines

## Well Gauging/Sampling Report

Sheet 5 of 5

Date: 4/5/05 Project Name: McK. 76 Project No: SP-160 Well Number: MW-6

Analyses Tested: BTEX, S-Oxy's, TPH<sub>g</sub>, TPH<sub>d/mo</sub>

Sample Containers: (3) HCL VOA's, (2) 1-L Amber bottles

Purge Technique: ☒ Bailer ☐ Pump

Sounder Used: ☐ Water Meter ☒ Interface Meter

### Water & Free Product Levels

Time	Depth to Water	Depth to Product	Notes
11:53	2.62		Shear detected
12:07	2.62		↓
	End		

### Field Measurements

Time	Total Vol. Removed (gal)	pH	Temp (F)	Cond. (ns/cm)	DO (mg/L)	DO (%)	
2:21	0	6.51	57.53	.214	.30	2.9	
2:27	1.53	6.43	58.20	.247	.28	2.8	
2:31	3.66	6.45	58.26	.274	.26	2.6	
2:35	4.59	6.48	58.26	.293	.27	2.7	

Field Scientist: Jeff Gaines